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Chris Burkard MADE *the* SWITCH



THIS WORLD-TRAVELING PHOTOGRAPHER CHOSE SONY BECAUSE HE WAS LOOKING FOR SOMETHING "POCKETABLE BUT POWERFUL."

For nature and travel photographer Chris Burkard, surfing and climbing and kayaking are more than just the subjects he photographs. They're integral to the life he lives.

"I've found that if you're able to live that lifestyle," Burkard says, "rather than just be like, 'this is what I want to shoot for work and this is what I want to shoot for myself and this is what I want to put out in the world...'" Well if you just decide to live it, I think that benefits a lot. If you're not having the experience yourself then it's not really going to come through in the imagery no matter how hard you try."

As a globetrotter, Burkard learned long ago that he needed a compact, convenient camera—one that literally wouldn't weigh him down. Five years ago he selected a Sony NEX-7 for a trip to remote northern Norway.

"I knew I was going to be traveling to super-remote places on snowmobiles," Burkard says, "and I was going to be bounced around. I couldn't bring a big, heavy DSLR around my neck. I needed to bring something that would be pocketable but powerful. The NEX-7 had just come out, and I had it in to supplement my Nikon. I started using it and was like, 'Oh my gosh, this thing is game changing.'"

He went back and forth between a Nikon system and various Sony mirrorless cameras until the

introduction of the A7 series in 2014, when he made the switch completely.

"The A7s is absolutely my go-to camera for nighttime and high ISO stuff," he says. "In the day it's the A7II, and soon it will probably be the A7RII. I've always put the emphasis on speed and agility and getting the shot."

"Every single time I pick up my camera," Burkard continues, "the quality just blows my mind. That's been everything to me. I feel like I'm constantly blowing people's minds in terms of, like, 'Oh yeah, you're shooting this on this tiny little camera.' But I do."

A small camera that produces huge dynamic range allow Burkard to really live the lifestyle he showcases in his work. He wants viewers to feel like the adventures he depicts are attainable, though he still has to work hard to produce them. Take the photograph of a kayaker on Alberta's Lake Maligne, for instance. He had to go the extra mile to get that shot.

"There's really nothing special about it," he says of the stunning image. "It's great light, and it's a great scene, but what makes it unique is the fact that I had to kayak four-and-a-half hours to get there. I wouldn't have gotten that shot if I hadn't brought my Sony. It just wouldn't have been as feasible. To me, that just speaks to the lightness of this system."

3 THINGS

WE HAVE TO LEARN TO GET REALLY GOOD AT PHOTOGRAPHY



1. WE HAVE TO FIGURE OUT OUR CAMERA

There are a ton of buttons, dials, and commands on the top, front and back of our cameras these days. For a lot of us, it's really frustrating because you know you could be getting a lot more out of your camera than you currently are. If you knew what all those buttons, dials, and commands actually did.

Well, first, here's the good news. You don't need to learn all that stuff. Because even though some of those operations are really important and make a difference, honestly, there are a bunch of controls in there that are total fluff. Just like in the menus on your TV, right? There are many options in the menus for your TV, but we only actually use a few. It's the same thing with your camera. The good news is that, in reality, you only have to learn a few key things on your camera. Just a few. But you've really got to learn them. Why? Because when you know what the vital parts of your camera do, you can stop fiddling around and start focusing on the stuff that actually makes images great. That's why we spend so much time teaching you which buttons matter, which items you can totally ignore, and how to get the most out of your camera.

The camera's just a tool to get great photos from you. But your chances for creating superior pictures go way up when you know your tools. This is something I know we can help you with at KelbyOne. We break this stuff down, cut out all the techie-talk and tell you exactly which buttons you need to know and which ones to ignore. You'll totally get it. And really quickly, I might add, so you can focus on the bigger picture of your craft.

2. WANT AMAZING RESULTS? DO THIS A BUNCH.

I remember hearing Joel Grimes give a talk. He's one of our instructors, an incredible teacher, and an amazing photographer. He was teaching how to take a photo of somebody on a gray background and then do a composite to make it look like the picture was taken outside on location.

Joel teaches everything from the lighting to Photoshop. It's easier than you'd think. Especially the way he teaches it. But after one of his classes, a student tried his hand at what he had been taught and brought the image to Joel. The student asked Joel what he thought of it. Joel said, "Hey, that's really, really good for your first one. I'm impressed. Now, go do that 300 more times."

In just that one sentence, Joel revealed one of the secrets to mastering any look, any style, and any type of photography. That is repetition. So many photographers these days are kind of all over the place. One day, they're shooting water drops with a high-speed flash. The following day is a soccer tournament. The next day is a family portrait outside under a tree. The day after that, it's a landscape.

How are you going to get really good at any one type of photography when you just kind of dabble in them? Want to be great at lighting? You need to do a lot of lighting. It's exactly why we have so many online classes on lighting. And landscape. And portraits. And fashion. And travel photography. Pretty much whatever you're into. Because you're going to want to learn new techniques and then go right out and practice them again and again until they're second nature.

That's the great thing about online classes. You can pause the video, try a technique, rewind it, and try it again until you know you can nail it. This repetition is key to taking you from a dabbler to a master in the shortest amount of time possible. We have an entire library of courses to back you up with everything from composition to posing, landscapes to travel, and even running the business side of things for yourself.

3. YOU'VE GOTTA LEARN THE POST PROCESSING

Since Adobe launched their Creative Cloud Photography Bundle, there has been an explosion in how many people have these professional-level tools at their disposal. These days, you can get the full-working latest versions of Photoshop & Lightroom for less than \$10 a month.

Now, the trick is to really learn them. I'm not talking about being a hack and just dragging sliders around aimlessly. I mean becoming a Photoshop & Lightroom shark where working in these two programs becomes second nature. It's fast and it's fun.

Now, I'm not going to tell you Lightroom and Photoshop are simple. They're not. They're professional post-processing applications and there's an awful lot to them. In fact, I would tell you this is something to be really concerned about if it weren't for the fact that we have a team of really gifted, passionate, and talented trainers. They are masters at making the complex stuff easy to understand, really fast to learn, and just a ton of fun. These are the same folks who founded the National Association of Photoshop Professionals (NAPP) and who are led by Scott Kelby, the world's bestselling author of photography, Photoshop and Lightroom publications.

Scott's assembled a team of the best of the best to do just one thing. That is to turn you into a post-processing wizard yourself, in a fraction of the time you'd think it would take and with a smile on your face the whole time. Because you're going to have a blast doing learning online at your own pace and on your own schedule.

We've put everything in place for you. We teach you the most important parts of your camera, letting you focus on creating visually. We have hundreds of online classes so you can learn, practice, and master techniques through simple repetition. Then, once you've got your shots, we teach how to organize, optimize, and finish your photos to the point that they blow people away.

If you're ready to start producing the kind of photography you've always dreamed about, it's time to join **KelbyOne.com**, our online educational community, and begin making better photos today. 📸



DON'T QUIT YOUR DAYDREAM.

This is your friendly reminder from the world around you. You can make something today that didn't exist yesterday. You can try something that's never been done before or just try something that you've never done before. But just doing something is the first step towards doing something great. Fuel your creativity.

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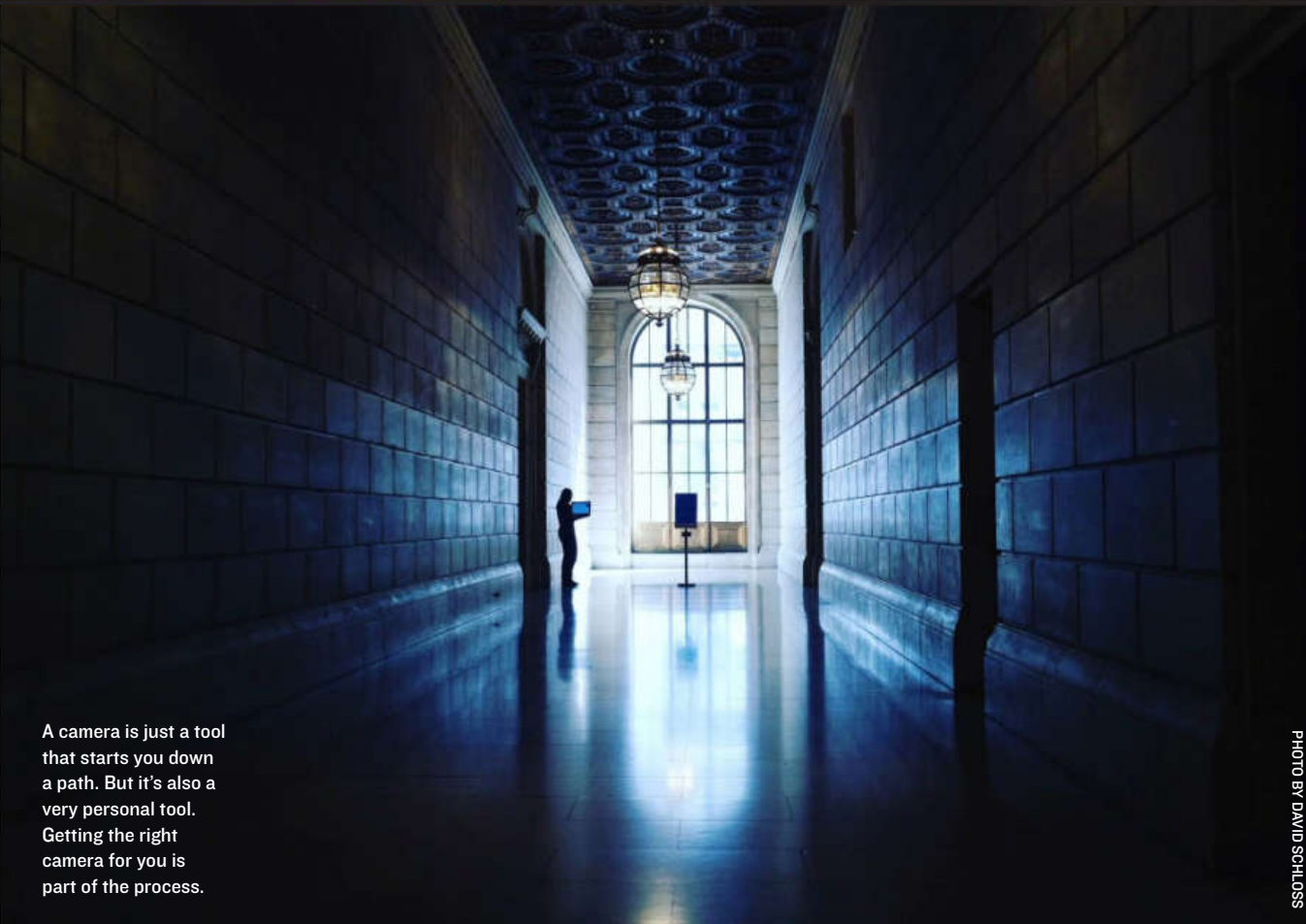
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A camera is just a tool that starts you down a path. But it's also a very personal tool. Getting the right camera for you is part of the process.

PHOTO BY DAVID SCHLOSS

Quick, guess how many new cameras were introduced in 2015?

Did you guess 10? 20? 50?

By our count, there were around 70 new cameras released in 2015, and that's not even counting the myriad new smartphones that arrived this year.

That's a particularly impressive number, considering that, in 2014, there were fewer than 40 new cameras released, which puts 2015 at nearly double the number of new models as the year before. Seventy new cameras, ranging from entry-level models at a \$100 price point all the way up to break-the-bank professional cameras as much as \$14,000—that's an astounding array of new photographic tools released in an era where pundits are claiming that the traditional camera is dead, and the smartphone is king.

Much of the activity in the industry

revolves around mirrorless cameras—Fujifilm, Olympus, Panasonic and, most notably, Sony—are capitalizing on the consumer demand for small, light, yet functional interchangeable-lens cameras. These system sales have translated into purchases of lenses, flash systems, adapters and other accessories, creating a secondary (and tertiary) market that's driving a renewed enthusiasm in the photographic market.

Not only were a lot of cameras introduced this year, but a lot of *incredible* cameras were released. That's especially true in the mirrorless space, where each of the manufacturers (Fujifilm, Olympus, Panasonic and Sony) released several cameras.

It feels like the theme of 2015 was “smaller, lighter, better.” Most of the new cameras this year have been smaller iterations of previous models or brand-new offerings in a

made-for-travel form factor. Photographers have more options for high-resolution, high-quality choices that go anywhere than ever in the history of photography.

NEW KIDS ON THE BLOCK

The Olympus OM-D E-M5 Mark II and OM-D E-M10 Mark II arrived in 2015, giving Micro Four Thirds photographers some incredibly strong and good-looking offerings. Panasonic, part of the MFT partnership, also dropped several great new cameras, including the affordable Lumix DMC-GF7 and the 4K video-capable Lumix DMC-GX8.

Fujifilm fans also got an array of new devices this year, as the company shipped three new models in their popular APS-C-based X-series. The X-T1, which was announced in 2014 and became one of the company's most popular cameras, was updated this year

with a unique IR sensor version that makes the camera perfect for fine-art photographers and scientists alike. The miniature, yet powerful X-T10 arrived this year, with the same sensor as the X-T1, but in a much smaller form factor, making it incredibly popular with travel photographers. Even smaller is the X-A2, which borrows stylings from cameras of yesteryear.

For full-frame mirrorless shooters, 2015 was an incredible year. Sony started off with the a7 II at the tail end of 2014, bringing 5-axis stabilization and improved autofocus with it. The a7R II was released in August, with even better autofocus than the a7 II, a completely redesigned (and improved) sensor and the highest-quality 4K recording in its class. In September, Sony announced the a7S II, with the highest ISO sensitivity around, cinema-level 4K settings and the other enhancements brought with the a7R II.

Samsung followed up last year's surprise entry into a more professional line of cameras, the NX1, with a smaller, lighter NX500.

Nikon released a new model in their Nikon 1 line, and Canon announced that their EOS M3 mirrorless camera, formerly unavailable in the U.S., will be coming to our shores.

SLR users weren't left out this year, either. New entry-level models from Canon and Nikon led the charge, complete with higher-resolution sensors, better ISO, and features like WiFi and improved LCD screens.

Impressively, it wasn't just entry-level SLR shooters who saw new models arrive; enthusiast-level cameras saw a great year, too. Canon's EOS 7D Mark II was probably the most anticipated camera (users have been clamoring for the updated version for years), but also, in 2015, we saw the arrival of a new Pentax K-3 II and the Nikon D7200, as well as the Nikon D750, which straddles the line between serious enthusiast and pro.

It was only at the top end of the SLR

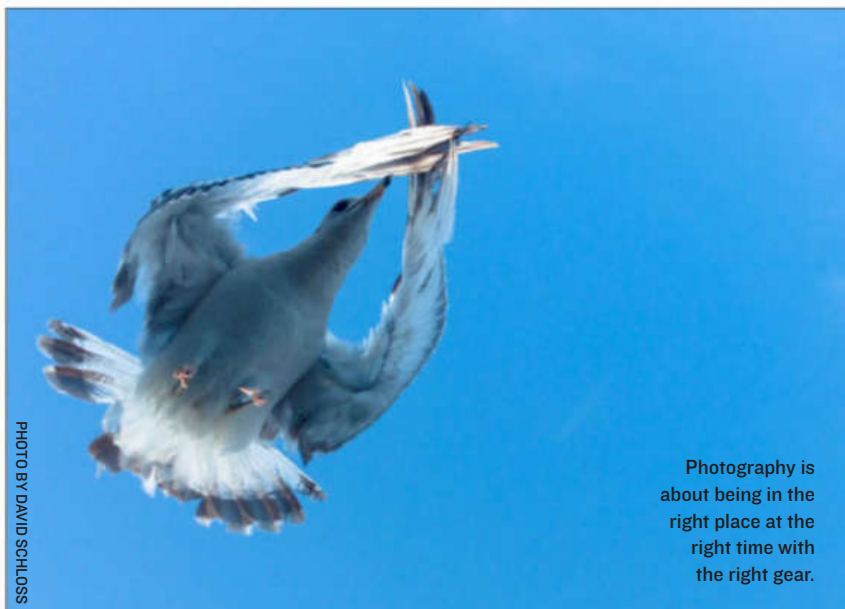


PHOTO BY DAVID SCHLOSS

Photography is about being in the right place at the right time with the right gear.

market that 2015 was anything less than spectacular. Canon and Nikon users are anxiously awaiting refreshes of the top-of-the-line systems—maybe 2016!—and only a few cameras were announced.

The Canon EOS 5DS and 5DS R were the sole professional models this year, and stole the limelight with their ability to capture 50-megapixel images.

Leica's S system got a boost with the Leica S (Typ 007), a "medium-format" camera in an SLR-styled body, and the rangefinder lineup saw the additions of the Leica Q (Typ 116) and the monochrome-capture-only Leica M Monochrom (Typ 246).

This stunning array of new products doesn't even include the compacts, waterproof compacts and SLR-style fixed-lens compacts released this year.

This was also the year that the "connected" camera market started to come to life. Expanding the capabilities of the powerful computers we carry around in our pockets on which we make phone calls, connected cameras like the DxO One, Olympus Air and Sony QX allow photographers to get more with less—more image quality, more sharing and social connectivity, and less bulk and weight.

BUYER'S GUIDE

There were so many new models announced this year, it's almost impossible to cover them all—though we have in this annual buyer's guide. You'll find the newest cameras, lenses, printers, drones, action cams, tripods, software and much more.

Photography always has been about more than the camera, but it's impossible without one. The stunning array of new camera models shows that the world of high-quality photographic imagery hasn't fallen by the wayside in favor of smartphone selfies.

I see our annual buyer's guide as a yearbook of photography, a snapshot (if you will) of where the industry is and what's available to help photographers be photographers. The many new products in these pages are, to me, a motivational tool to get out and explore the world of photography, expand my arsenal of tools and find some lustworthy objects to save up for.

I don't know how many new cameras 2016 will bring, but the array of choices that came to market this year is a sign of the health and vitality of the photography industry, and a reflection of the scope and passion of today's photographers.

—David Schloss, Editor, @davidjschloss



Add professional monitoring and recording to any SDI and HDMI camera with Blackmagic Video Assist!

Blackmagic Video Assist is the ultimate on set production monitor and recorder for any SDI or HDMI camera! The large bright 5 inch monitor lets you see your framing and ensure you get absolutely perfect focus! The built in recorder uses common SD cards and records extremely high quality 10-bit 4:2:2 ProRes or DNxHD files that are much better quality than most cameras can record and are compatible with all video software. Now it's easy to add professional monitoring and recording to any camera!

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FIRST PLACE

"OBSERVER"

BY GORAN JOVIC

"The Hamar tribe is one of many tribes along the banks of the Omo River in southern Ethiopia, and goat cattle is their wealth," says Goran Jovic. "This photograph captured two Hamar tribe shepherds observing the Omo Valley, keeping their cattle and the upcoming storm in sight."

**Canon EOS 5D Mark III,
Canon EF 17-40mm f/4L USM**



SECOND PLACE

“EDDIE’S BOAT”

BY PAWEL ZYGMUNT

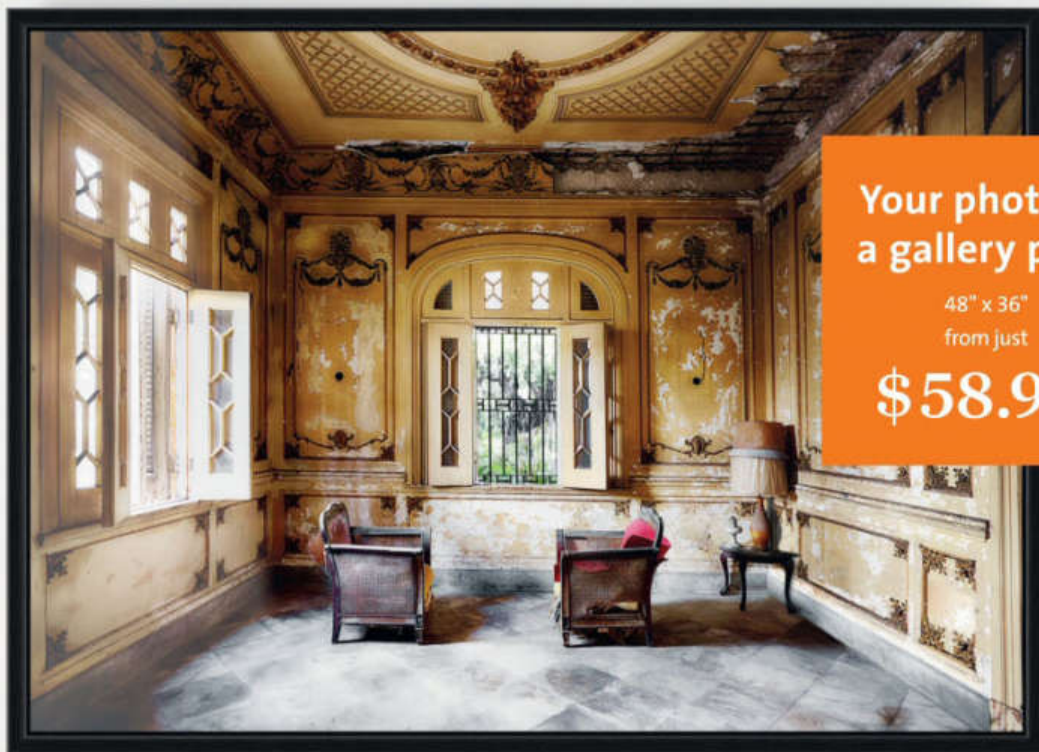
“A couple of months ago, I drove down to the northwestern part of Ireland for a few days to visit some of the most beautiful places Ireland has to offer,” explains Pawel Zygmunt. “On the second day of my lonely trip, I reached Magheraclogher Beach in the small Gaeltacht village of Bunbeg in County Donegal. Fortunately, there was a low tide starting at 5:30 p.m., so by 9 p.m., the water uncovered land all the way to the shipwreck. It’s an abandoned fishing vessel that ran into trouble during stormy seas in the 1970s. *Cara Na Mara* (*Friend of the Sea*) is its name, but locals call it *Bád Eddie* (*Eddie’s Boat*). The boat is split in half, and I say it’s a last chance to see it still looking like one.”

Nikon D750, Tokina 16-28mm f/2.8, Sigma 24-70mm f/2.8, LEE polarizing filter, LEE ND graduated filter soft 0.6 and 0.9, LEE ND filter 1.2, Manfrotto tripod

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MIRRORLESS

THE LATEST COMPACT MIRRORLESS MODELS

BY MIKE STENSVOld

CANON EOS M3

Canon's newest mirrorless interchangeable-lens camera, the EOS M3 has been available for a while outside the U.S., but now it's available here. Like the original EOS M, it's a very compact, "flat"-style design that uses EF-M lenses and (with the optional Mount Adapter EF-EOS M), a wide range of Canon EF and EF-S DSLR lenses. Inside are the company's highest-resolution APS-C sensor (24.2-megapixel Canon CMOS) and a DIGIC 6 image processor that combine to deliver high-resolution photos and Full HD videos. The sensor incorporates Canon's 49-point Hybrid CMOS AF III system, with phase-detection pixels right on the sensor, as well as contrast-detection AF; it's up to 6.1X faster than the AF system in the original EOS M.

The tilting, 3.0-inch, 1040K-dot LCD monitor has touch capability for simple menu navigation and playback, and quick touch focusing for stills and video. Video capabilities include 1080 Full HD at 30p/25p and 24p, 720 HD video at 60p/50p and a 640x480 mode.

The camera can shoot full-resolution stills at up to 4.2 fps, 2.4 fps with continuous AF.

The optional Electronic Viewfinder EVF-DC1 provides eye-level viewing and also features an external mic jack. Built-in WiFi with NFC makes it easy to connect and share photos and operate the camera remotely via your smartphone or tablet.

Estimated Street Price: \$579.99 (body only); \$749.99 (with 18-55mm EF-M kit zoom).



FUJIFILM X-T10

The X-T10 brings much of the magic of the flagship X-T1 mirrorless camera to a wider audience, in a smaller, less expensive package. The X-T10 uses the same 16.3-megapixel APS-C Fujifilm X-Trans CMOS II sensor as the X-T1, which features a unique RGB filter array that minimizes moiré and false colors, allowing Fujifilm to do away with the sharpness-robbing optical low-pass filter. The sensor also incorporates more than 100,000 phase-detection pixels for quicker AF in good light (the camera automatically switches to contrast-based AF in dim light).

A 2360K-dot OLED electronic viewfinder complements the tilting 3.0-inch, 920K-dot external LCD monitor, making for easy eye-level or odd-angle shooting. The viewfinder has a lag of just 0.005 seconds for near-real-time response, and features both natural and auto brightness modes so you can view the image as the eye sees it or as it will be recorded (including white balance, exposure comp and effects).

Like the X-T1, the X-T10 can shoot at 8 fps with focus tracking (3 fps with full-time live view), plus both 1080 Full HD and 720 HD video at 60p, as well as 30p. New AF Zone and Wide/Tracking focus modes enhance performance, as does a new algorithm for smoother AF in video shooting. A new electronic shutter with speeds up to 1/32,000 complements the conventional shutter, which tops out at 1/4000.

Built-in WiFi and the Fujifilm Camera Remote App let you control the camera from your smartphone or tablet, and make it easy to transfer images from the camera and even geotag images using the smartphone's GPS.

Estimated Street Price: \$799.95 (body only); \$899.95 (with XC16-50mm kit zoom).



FUJIFILM X-A2

Fujifilm's X-A2 replaces the X-A1 as the entry-level model in the company's popular X-series mirrorless camera lineup, at almost exactly the same size as the X-A1, and with the same sensor. Unlike Fujifilm's pro cameras, which use a Fuji-designed X-Trans sensor, the X-A2 uses a standard Bayer filter sensor.

The 3.0-inch LCD monitor now can tilt 175° for easy selfies. Eye-detection AF automatically focuses on the eyes (you can choose auto, left-eye priority or right-eye priority).

Forty-nine-point contrast-based AF includes face detection and subject tracking, as well as a new Multi-Target multi-AF mode.

Like its predecessor, the X-A2 is quick: It starts up in 0.5 seconds, autofocuses in

0.3 seconds and can shoot up to 5.6 fps. Built-in WiFi allows for easy wireless image transfer to smartphone or tablet. All dials and buttons are positioned on the right for easy one-handed operation.

Fujifilm was a major film manufacturer before digital imaging, and the X-A2 offers the company's film simulation modes, including Classic Chrome (muted tones), Provia (neutral colors), Velvia (dramatic, rich colors) and Astia (beautiful skin tones). The camera can do multiple exposures, using the first image as a guide to position the second on the LCD monitor.

Video capabilities include 1080 HD at 30p with stereo sound via built-in microphone.

Estimated Street Price: \$549 (with XC16-50mm OIS II kit zoom).



NIKON 1 J5

The Nikon 1 J5 features a new 20.8-megapixel CX-format, 1-inch (13.2x8.8mm) backside-illuminated CMOS sensor and EXPEED 5A processing to deliver impressive image quality, a standard ISO range of 160-12800 and 1080 Full HD video at up to 60p (also 4K, but at just 15p). There's also superfast still shooting: up to 20 fps with continuous AF and up to 60 fps with AF locked at the first frame. The quick hybrid AF system features 171 contrast-detect and 105 phase-detect AF points, all on-sensor. Shutter speeds run from 30 to 1/16,000 seconds, thanks to an electronic shutter. The 3.0-inch, 1037K-dot touch-screen LCD monitor tilts 180° for easy low-angle and selfie shooting.

Built-in WiFi (with NFC for Android devices)

makes it easy to send photos wirelessly from the camera to a smartphone or tablet, share images on the Internet and even operate the camera remotely. A new EN-EL24 battery provides up to 250 shots per charge (per CIPA standard) or 60 minutes of 1080/30p video.

Like all Nikon 1 cameras, the J5 can use all Nikon 1 Nikkor lenses and (via optional FT-1 Mount Adapter) many AF-Nikkor DSLR lenses. Currently, there are 13 native 1 Nikkor lenses, from a 6.7-13mm VR zoom to a 70-300mm VR zoom; with the sensor's 2.7X focal-length factor, this provides native focal lengths equivalent to 18mm through 810mm on a full-frame camera.

Estimated Street Price: \$499.95 (with 10-30mm kit zoom).



OLYMPUS OM-D E-M5 MARK II

Olympus has included nearly every feature under the sun in their OM-D E-M5 Mark II. The dust-proof and splash-proof body features a 2.36M-dot electronic viewfinder and a tilting 3.0-inch vari-angle touch-screen display, as well as a full complement of manual controls.

The camera uses a 16-megapixel Micro Four Thirds Live-MOS sensor, which can capture images up to 40 megapixels with its High Resolution Shot Mode, which combines eight images captured while the sensor moves to capture more color information.

The E-M5 Mark II's 81-point Fast AF can provide continuous AF at 5 fps (the camera can do up to 10 fps with focus locked at the first frame). Top mechanical shutter speed is 1/8000; silent mode provides

a 1/16,000-second electronic shutter for silent shooting. The E-M5 Mark II can do 1080 video at 60p (and slower rates), and you can adjust such things as AF point, exposure, electronic zoom, Movie Teleconverter, audio volume and art effects, all while recording, using the touch screen.

The camera has built-in WiFi for easier image transfer to mobile devices, and a host of special effects modes for creative imaging.

Like all Micro Four Thirds cameras, the E-M5 Mark II can use all MFT lenses and just about any lens for which an adapter can be found. Current Olympus MFT lenses range from a 9mm fish-eye and 9-18mm zoom through a 75-300mm zoom, providing, thanks to the MFT sensor's 2.0X crop factor, 35mm-camera-equivalent focal lengths from 18mm through 600mm.

Estimated Street Price: \$1,049.

OLYMPUS OM-D E-M10 MARK II



Olympus has made a number of improvements to this entry-level mirrorless model, including a new compact design with better ergonomics. The OM-D E-M10 Mark II boasts a better OLED EVF (2.36M dots vs. 1.44M), touch-screen capability on the 3.0-inch, 1.038M-dot tilting LCD monitor and five-axis VCM (Voice Coil Motor) sensor-shift image stabilization (vs. 3-axis for the original E-M10). Contrast-based AF is very quick, and more accurate with night scenes. Live composite mode lets you do stacked night scene photography in-camera at a press of a button; there's no need to shoot multiple frames manually and then combine images in Photoshop.

Focus bracketing lets you shoot up to 999 frames focused at different distances (you can choose the initial focusing point and the increments) for convenient macro stacking (this feature works with Micro Four Thirds lenses only). 4K time-lapse mode lets you shoot up to 199 still

images at five-second intervals, then turn them into a 4K time-lapse video file. The camera can shoot full-res still images at 8.5 fps with focus locked at the first frame (4 fps with AF).

The E-M10 Mark II can shoot 1080 Full HD video at 60p/50p/30p/25p/24p (up from 30p for the original E-M10), and is compatible with UHS-II SD media. The touch panel can be used to control the smooth and simple electronic zooming during video.

Built-in WiFi makes it easy to upload images and video to a mobile device wirelessly and control the camera remotely via Olympus Image Share. There are now 14 Art filters (12 in the original E-M10). Like its OM-D brethren (and all Micro Four Thirds cameras), the E-M10 Mark II can use all MFT lenses and just about any lens for which an adapter can be found.

Estimated Street Price: \$649.99 (body only); \$799.99 (with 14-42mm EZ kit zoom).

PANASONIC LUMIX DMC-GF7

Even smaller than its tiny GF6 predecessor, the DMC-GF7 offers a host of features that make it easy to take great selfies. The 3-inch, touch-screen LCD monitor tilts 180°, and when so positioned, puts the camera in Self Shot Mode, enabling a number of selfie functions. Face Shutter trips the shutter when you wave at the camera. Buddy Shutter trips the shutter when you bring two heads close together. Three Beauty functions produce more attractive selfies: Soft Skin, Slimming and Defocusing modes. And Jump Snap uses your smartphone's accelerometer to trip the shutter at the high point of a group jump.

The GF7's built-in WiFi capabilities also make it easy to share images, and allow you to zoom, focus and fire the camera wirelessly via your mobile device.

There's more to the GF7 than just selfies, of course. New sensor technology and Venus Engine processing get the most out of the 16-megapixel Micro Four Thirds image sensor. The Light Speed contrast AF system is very fast (camera and lens exchange signals at up to 240 fps), and the camera can shoot at 5 fps in AFC mode, 5.8 fps in AFS and 40 fps using the electronic shutter. Video capabilities include 1080 Full HD at 60p/60i/30p/24p, with stereo sound. Touch AF makes it easy to do pro-style rack focusing.

Like all Micro Four Thirds cameras, the GF7 can use all MFT lenses, along with pretty much any lens for which an adapter is available.

Estimated Street Price: \$499 (with 12-32mm kit zoom).



PANASONIC LUMIX DMC-GX8

The new DMC-GX8 combines the highest-resolution sensor in a Micro Four Thirds camera (20.3 megapixels) with the ability to record 4K (3840x2160) video at 30p/24p direct to UHS Speed Class 3 SDHC cards, no external recorder required. Special 4K modes give you 8-megapixel-equivalent still images from 30 fps videos. There's also an intervalometer for time-lapse photography.

A high-eyepoint, 2.3-million-pixel OLED electronic viewfinder provides handy eye-level viewing for stills and video, and tilts up for easy low-angle shots, while the 3.0-inch, 1040K-dot vari-angle OLED monitor provides touch AF, handy for odd-angle still and video shooting.

Panasonic's DFD (Depth From Defocus) contrast-based AF system with a new AF tracking algorithm and 240 fps digital signal communication

provides very quick, accurate autofocus for stills and video (and 6 fps still shooting with AFC, 8 fps with focus locked at the first frame). The AF system works in light levels as dim as EV -4, and a new Star Light AF mode lets you photograph the night sky with AF. A new Dual IS system provides sensor-shift image stabilization for still images and can work in conjunction with in-lens stabilization to provide Dual IS when compatible (firmware-upgraded) Panasonic O.I.S. lenses are used. For video, there's a 5-axis Hybrid O.I.S.+ system from Panasonic's pro video cameras.

Built-in WiFi with NFC allows for easy wireless transfer of images to a smart device or computer, and remote control of the camera. All this is packed in a rugged splash/dust-sealed body.

Estimated Street Price: \$1,199.99.



PANASONIC LUMIX DMC-G7

Panasonic's DMC-G7 retains the "mini-DSLR" form factor of the original mirrorless interchangeable-lens camera—the company's DMC-G1 from 2008—but includes a latest-gen 16-megapixel Micro Four Thirds image sensor that can deliver 4K and HD video in a number of different formats. In QFHD mode (4K), the camera can capture 3480x2160 video at 30p or 24p; in FHD mode, it can capture Full 1080 HD at 60p. It also captures a number of lower resolutions. The G7 can record video to a UHS Speed Class 3 in-camera SDHC/SDXC memory card—no external recorder required. A 4K Photo function lets you record 4K (8 MP) images at 30 fps or pull 4K still images from video during playback, time-lapse, stop-motion and more.

The G7 can shoot full-res 16-megapixel stills at 10 fps (6 fps with continuous AF/live view). The contrast-based AF system is very fast and can function in light as dim as EV -4. Focus peaking is provided as an aid when focusing manually. The 3.0-inch, 1040K-dot vari-angle LCD monitor features touch AF, while the 2360K-dot OLED electronic viewfinder provides handy eye-level viewing for stills and video.

Built-in WiFi lets you control the camera via a mobile device, using the Panasonic Image App, and share your images directly from your device.

Like all Micro Four Thirds System cameras, the G7 can use all MFT lenses, regardless of manufacturer. Panasonic currently offers about 20, from a 7-14mm superwide zoom and an 8mm fisheye to a 100-300mm supertele zoom. With the MFT sensor's 2X crop factor, this provides full-frame-equivalent focal lengths of 14mm to 600mm.

Estimated Street Price: \$799.95 (with 14-42mm kit zoom).



SAMSUNG NX1

Samsung's flagship mirrorless model, the NX1 features the high-resolution sensor allowed in APS-C, a 28.2-megapixel, backside-illuminated CMOS sensor complemented by 14-bit DRiME V processing. There are two options for 4K video: 3840x2160 UHD 4K at 30p can be recorded directly to the SD card in the camera and higher-resolution 4096x2160 4K at 24p to an external recorder. The NX can also do Full HD and lower-res video.

The hybrid NX AF System III features 205 on-sensor phase-detection points (153 of them cross-type), plus 209 contrast-detection points, working together to bring you the speed of phase-detection AF and the accuracy of contrast-detection AF. A 221-segment TTL metering system and ISO settings from 100-25,600 (expandable to 51,200) provide ample exposure control. The 3-inch, tilting touch-screen Super AMOLED monitor is complemented by an XGA OLED eye-level electronic viewfinder. It's all contained in a durable, weather- and dust-resistant magnesium-alloy body.

Built-in WiFi, with easy-connect NFC and Bluetooth, makes it simple to transfer images wirelessly to a smartphone or tablet, or geotag images using the smartphone's GPS. There's also USB 3 for quick wired transfer of images.

Like all NX-system cameras, the NX1 can use all NX lenses. These currently range from a 10mm fisheye and 12-24mm superwide zoom to the 18-200mm, 50-200mm and new 50-150mm f/2.8 S OIS zooms.

Estimated Street Price: \$1,699.



SAMSUNG NX500

If you'd like the core features of Samsung's flagship NX1 mirrorless camera, but in a more compact body, the new NX500 is the camera for you. It has the same 28.2-megapixel BSI sensor as the NX1, a powerful DRiME 55 processor, and can do 4K 4096x2150 at 24p and UHD 3840x2160 video at 30p straight to the internal memory card; it can also capture 1080p HD video. (Note that the NX500 captures a 4K area in the center of the sensor, so the angle of view is narrower than with the NX1, which captures the full 28 megapixels and resizes to 4K.) The NX500 doesn't have the NX1's electronic viewfinder, but its 3.0-inch touch-screen AMOLED monitor tilts 180° for easy selfie shooting.

A hybrid AF system works in light as dim as EV -4, and you can shoot action at up to 9 fps. SMART mode automatically sets the

camera for Action Freeze, Beauty Face, Fireworks, Landscape, Light Trace, Multi-Exposure, Night, Panorama, Rich Tones, Silhouette, Sunset and Waterfall photos, and there's a UHD Time-lapse Video mode, as well.

Like the NX1, the NX500 offers built-in WiFi, with NFC setup, as well as Bluetooth for connections to mobile devices. So it's easy and quick to send large photos and video files to other smartphones and tablets, and operate the camera remotely from your device. And like all NX-system cameras, the NX1 can use all NX lenses. These currently range from a 10mm fish-eye and 12-24mm superwide zoom to the 18-200mm, 50-200mm and new 50-150mm f/2.8 S OIS zooms.

Estimated Street Price: \$799 (with 16-50mm power zoom and electronic flash).

SONY a7 II



In Fall 2013, Sony shook up the mirrorless interchangeable-lens camera world by introducing the first full-frame-sensor model—two, actually—the 24-megapixel a7 and 36-megapixel a7R. In Spring 2014, they added the low-light/4K video specialist a7S and now have introduced the successor to that first a7 model, the 24.3-megapixel a7 II. And where the original a7 was a very good camera, the new a7 II is an even better one.

For starters, there's now 5-axis SteadyShot INSIDE sensor-shift image stabilization introduced in the recent a7 II. Like all a7-series cameras, the a7R II features built-in WiFi with NFC for easy connection and wireless image transfer and camera control (via compatible mobile device).

The Hybrid AF system still uses 117 on-sensor PDAF points (77 in APS-C mode) and 25 contrast-detect AF points, but features new algorithms that make it 30% faster and 1.5X more accurate than the original a7's. AF and auto exposure are provided even during the camera's fastest 5 fps shooting rate. The a7 II also starts up 40% faster than the original a7.

The Bionz X processor allows for enhanced video capability, including 1920x1080 at 60p using the fast XAVC S codec, picture profiles and Sony's S-Log2 gamma for wide dynamic range.

All of the a7 cameras share the same compact form factor and take Sony FE-mount full-frame lenses (of which there are currently seven, from a 16-35mm f/4 to a 70-200mm f/4, with more on the way), plus other lenses via adapters.

Estimated Street Price: \$1,699.

SONY a7R II

Sony's second-generation flagship a7R model, the a7R II is loaded with excellent features, starting with a new 42.4-megapixel back-illuminated full-frame Sony Exmor R CMOS sensor with no low-pass filter, improving sharpness. The new sensor and Bionz X processor can deliver huge image files at 5 fps with continuous AF, as well as 3840x2160 4K video at 30p and 24p (and processing every pixel, with no binning, for much better video quality). The new Fast Hybrid AF system features 399 on-sensor phase-detection points (357 in 18-megapixel APS-C mode), plus 25 contrast-detection points.

A new shutter cuts vibration by about 50% over its predecessor, and has been tested to 500,000 cycles. Silent mode with electronic front curtain eliminates vibration and noise. The upgraded 2.36M-dot OLED eye-level Tru-Finder features 0.78X magnification.

The a7R II also features the five-axis (pitch,

yaw, roll, up-down and left-right) SteadyShot INSIDE sensor-shift image stabilization introduced in the recent a7 II. Like all a7-series cameras, the a7R II features built-in WiFi with NFC for easy connection and wireless image transfer and camera control (via compatible mobile device).

Like its siblings, the new a7R II can use all Sony FE lenses, which were designed for Sony's high-res full-frame sensors. It can also use E-mount lenses (the camera will automatically crop to APS-C format when one is attached) and, with the LA-EA4 adapter, Sony A-mount and legacy Konica Minolta DSLR lenses, with phase-detection AF. It can also use Canon EF lenses (with AF, via a Metabones adapter), as well as many other lenses, via adapters, with manual focusing (focus peaking makes that easy).

Estimated Street Price: \$3,199.



SONY a7S II



At 12.2 megapixels, the a7S II has many fewer pixels than the a7 II or a7R II, which translates to better dynamic range and better sensitivity than those models. For many photographers, this is likely to be a sweet spot, just big enough for any commercial jobs, and with a dynamic range and sensitivity not matched in the company's other offerings.

The a7S II has sensitivity up to 409,600 in expanded mode (ISO 100 to 102,400 in native mode) and can record 4K video internally. The need for an external 4K recorder was a limitation to the adoption of the a7S for video work, and internal 4K recording was the most often heard request for the a7S line.

New features aimed at advanced video users

include S-Gamut3.Cine/S-Log3, a new Gamma Assist Display and an enhanced Zebra Function. The camera can also capture Full HD video at 120 fps and 4x/5x slow-motion when using the full range of pixels on the sensor, making it the most versatile camera-style video device in the class.

Video is recorded without pixel binning and inherits the same 5-axis stabilization and fast focusing systems as the a7R II. It also will be the first Sony to ship with 14-bit uncompressed RAW support for incredible fidelity. Like all a7 models, the a7S II can use Sony E-mount lenses, Sony A-mount DSLR lenses (with a Sony adapter) and a wide range of third-party lenses via third-party adapters.

Estimated Street Price: \$2,499.

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Recommend to use
the YN600EX-RT



YN600EX-RT

- Supports RT System
- One YN600EX-RT can be used as on-camera master unit and remote slave unit of Canon's RT system, and supports Gr grouping mode.
- Fully Compatible with YONGNUO YN-E3-RT, Canon's 600EX-RT/ST-E3-RT Wireless Signal
- One YN600EX-RT can be used as master unit to trigger YONGNUO YN600EX-RT, Canon's 600EX-RT and live display the flash groupings of slave unit and recycling information; One YN600EX-RT can respectively receive the wireless signal of master unit YN600EX-RT, YN-E3-RT, Canon's 600EX-RT/ST-E3-RT, realizing remote TTL, M and Gr flash.
- High Guide Number, Supports High-speed Sync
- GN60@ISO100, 200mm; supports high-speed sync TTL, manual flash, Gr grouping flash, the highest synchronous speed can reach 1/8000s
- Supports USB Firmware Upgrade
- The YN600EX-RT equipped with the USB interface, supports firmware upgrade, the users can download the upgrade firmware through the Yongnuo official website to upgrade the flash.
- Supports Wireless Optical Slave function
- The YN600EX-RT supports YONGNUO, Canon's and Nikon's wireless optical master signal, supports S1 and S2 pre flash cancel mode.
- Support Auto/Manual Zooming
- The YN600EX-RT supports auto and manual zooming, the flash coverage can be changed between AUTO, 20-200mm.
- Settings Save Automatically, Supports Custom Settings (Fn)
- The parameters on the flash will automatically save when the flash turned off, the users can customize setting the flash function as needed.
- Ultrafast Charging Recycle System, Supports External Power Supply
- Equipped with Big Size LCD Display Screen, Standard PC Synchronous Interface



ENTRY-LEVEL DSLRs

THE LATEST DSLRS FOR ENTHUSIAST PHOTOGRAPHERS

BY MIKE STENSVOLD

STANDOUT FEATURE:

A top-panel LCD and rear Quick Control Dial for the first time in an EOS Rebel



The new LCD panel atop the camera provides access to many shooting features, and is a first on an EOS Rebel.



The Quick Control Dial surrounding the four-way controller on the back of the camera is common on higher-end EOS models, but another first for a Rebel.

The vari-angle LCD monitor can rotate into selfie position.



CANON EOS REBEL T6s

Canon's new entry-level EOS Rebel model, the T6s incorporates some Rebel "firsts." It's the first Rebel model with a top-deck LCD panel (something users of higher-end EOS models have long enjoyed) and a Quick Control Dial on the back, another higher-end EOS feature that makes it easier and quicker to set camera functions. The T6s also provides Servo AF in Live View mode, an electronic level display, a digital zoom for movies and HDR video, features that the lower-priced T6i lacks.

Like the T6i introduced at the same time, the T6s features Canon's highest-megapixel APS-C sensor, a new 24.2-megapixel CMOS unit that combines with DIGIC 6 processing (another first in an EOS Rebel) to

improve image quality and speed up processing of those big image files. Normal ISO range is 100-12800, expandable to 25600.

Built-in WiFi with NFC makes it easy to establish a connection and wirelessly transfer images to compatible smart devices, print images with a WiFi printer and even control the camera remotely from a mobile device.

For viewfinder shooting, there's 19-point phase-detection AF, all points being cross-types that work with maximum apertures as small as $f/5.6$. For live view and video, there's Canon's Hybrid CMOS AF II, which combines phase-detection and contrast-detection, and covers 80% of the screen

horizontally and vertically. The camera can shoot full-resolution still images at 5 fps, plus 1080 video at 30p/25p/24p, 720 at 60p/50p, 640x480 at 30p/25p, and 1280x720 HDR video at 30p/25p. You can activate 3-10X Movie Digital Zoom to increase the range of your lenses.

Like the T6i, the T6s uses Canon's LP-E17 lithium-ion battery pack, and gets about 550 shots per charge in viewfinder shooting and 200 in live view (per CIPA standard tests). Dimensions are 5.2x4.0x3.1 inches and 18.4 ounces.

Estimated Street Price: \$849.99 (body only); \$1,199 (with 18-135mm STM kit zoom).

Like all digital Rebels, the T6i has a built-in pop-up flash unit, plus a hot-shoe for external flash.



STANDOUT FEATURE:

Canon's lowest-priced 24-megapixel camera

CANON EOS REBEL T6i

The EOS Rebel T6s's "kid brother," the Rebel T6i features the same new 24.2-megapixel Canon CMOS APS-C sensor and DIGIC 6 processor, built-in WiFi with NFC, and compact 5.2x4.0x3.1-inch external dimensions (although the T6i, at 18.0 ounces, is 0.4 ounces lighter). The main differences between the new Rebels are that the T6i lacks the T6s's top LCD panel, rear Quick Control Dial, Servo AF in Live View mode, electronic level display, digital zoom for movies and HDR video capability. If these things are important to you, get the T6s; if not, you get the same image quality and performance in the T6i for \$100 less.

Both cameras feature an eye-level pentamirror viewfinder that shows approximately 95% of the actual image area and a 3.0-inch, 1040K-dot vari-angle touch-screen LCD monitor that makes for easy odd-angle shooting and focus changes in video mode. A new 7560-pixel

RGB+IR metering sensor can detect the primary light source and even flickering light for more accurate exposures in a wide range of shooting situations.

Canon's Hybrid CMOS AF II provides improved AF speed and accuracy in Live View and video modes (albeit without the T6s's live view Servo AF), while AF in viewfinder operation is 19-point (all cross-type) phase-detection for maximum apertures as small as $f/5.6$. Like the T6s, the T6i can shoot full-resolution still images at 5 fps, and 1080 video at 30p/25p/24p, 720 at 60p/50p and 640x480 at 30p/25p.

Like all recent APS-C EOS cameras, the T6i can use all Canon EF and EF-S lenses, providing focal lengths from an 8-15mm fisheye zoom and a 10-18mm superwide zoom to an 800mm super telephoto, including TS-E tilt-shift lenses.

Estimated Street Price: \$749.99 (body only); \$899.99 (with 18-55mm STM kit zoom); \$1,099 (with 18-135mm STM kit zoom).



The T6i only has the conventional Rebel mode dial, and lacks the LCD screen on the T6s.



The back panel features the customary Rebel cross keys and Quick Control Button, but not the T6s's Quick Control Dial.

A new monocoque design provides an even smaller body that's some 2 ounces lighter than the D5300.



The D5500 is also available in red.

STANDOUT FEATURE:

A lighter body with a touch-screen vari-angle LCD monitor makes it easier than ever to shoot high-quality stills and video anywhere

NIKON D5500

The fifth generation of Nikon's entry-level DSLR, the D5500 retains a lot of good features from its D5300 predecessor, and adds some useful new ones, as well. There's still the 24.2-megapixel DX (APS-C) CMOS sensor with no AA filter for maximum sharpness, 12- and 14-bit compressed NEF (RAW) capability, and EXPEED 4 processing, but the normal ISO range is now 100-25600 for both stills and video (25600 was an expanded setting with the D5300 and not available for video). Maximum frame rate remains 5 fps, but you can shoot more frames per burst. The 39-point AF system (with nine cross-type sensors in the center) remains the same. The D5500 adds Super Vivid, POP and Photo Illustration to the D5300's Effects Modes.

Like the D5300, the new D5500 offers built-in WiFi for quick and easy sharing of images wirelessly via smartphone or tablet, and even remote operation of the camera via your smart device. The new camera lacks its predecessor's built-in GPS, but now provides 820 shots per charge on the same EN-EL14a battery (per CIPA standard), a 37% increase, perhaps in part because of that.

Video capabilities include 1080 Full HD at 60p (also 30p and 24p, or 50p/25p in PAL format), as well as 720 HD at 60p (50p PAL) and 640x424 VGA at 30p (25p PAL), with full-time



The 3.2-inch, 1037K-dot vari-angle LCD monitor now offers touch-screen features, making odd-angle shooting even easier; just touch the subject on the LCD to focus and shoot.

contrast-based AF or manual focusing. You can record stereo sound via a built-in microphone or an optional external mic. But you now have interval timer exposure smoothing and can shoot interval timer sequences of up to 9999 frames.

Even more compact than its predecessor at 4.9x3.8x2.8 inches and 14.8 ounces, the D5500 likewise doesn't incorporate an AF motor and so can autofocus only with Nikkor lenses that have one (AF-S and AF-I). But there's a full range of those, from a 10-24mm superwide zoom to an 800mm supertelephoto.

Estimated Street Price: \$899.95 (body only); \$999.95 (with 18-55mm kit zoom).

PENTAX K-S2

Just six months after the introduction of the K-S1, Pentax has introduced an even fuller-featured mid-range DSLR. The new K-S2 offers many of the K-S1's assets and adds the first articulated LCD panel in a Pentax DSLR, along with the first built-in WiFi (with NFC for easy connection) for wireless transfer of images and remote camera operation via your smartphone or tablet. (Gone are the K-S1's flashy LEDs.)

Retained from the K-S1 (which remains in the lineup) are the 20.1-megapixel APS-C CMOS image sensor with no AA filter, a fast PRIME MII imaging engine, ISO sensitivity from 100-51200, 11-point AF, 77-segment multi-pattern metering, in-body sensor-shift shake reduction that works with all lenses, shutter speeds up to

STANDOUT FEATURE:

Functionality not usually found at this price point

1/6000, 1080 Full HD video at 30p/25p/24p with stereo sound via a built-in microphone, and a dustproof, weather-resistant body. The K-S2 can shoot up to 5.5 fps and adds a Clarity Enhancement feature that delivers more realistic textures; it's automatically applied when you activate the new A-HDR mode.

Despite its compact size, the K-S2 features a glass pentaprism finder that shows almost 100% of the actual image area, with a 0.95X magnification factor. Pentaprism finders are brighter than the pentamirror types usually found on DSLRs in this price range. There's also a built-in pop-up flash unit. The camera can compensate for lens distortion, chromatic aberration, peripheral brightness (vignetting) and diffraction.

Like all Pentax DSLRs, the K-S2 can use just about any Pentax SLR/DSLR lens, including (via adapter) old screw-mount ones and Pentax medium-format lenses. Current DSLR lenses range from a 10-17mm fisheye zoom and a 14mm f/2.8 superwide-angle to a 560mm f/5.6 supertelephoto, plus a 1.4X teleconverter. In-body sensor-shift Shake Reduction provides stabilization with all lenses. Dimensions are 4.8x3.6x2.6 inches and 21.7 ounces (body only).

Estimated Street Price: \$799.95 (with weather-resistant, retractable 18-50mm kit zoom).



While the K-S1 lacks a front control dial, the K-S2 has both front and rear dials.



The LCD monitor now tilts and swivels for easy selfies and odd-angle shooting.

The K-S2's kit zoom is a weatherproof, retractable 18-50mm zoom lens.

ADVANCED DSLRs

THE LATEST MODELS OVER \$1,000

BY MIKE STENSVOld

CANON EOS 7D MARK II

Canon's long-awaited successor to 2009's EOS 7D popular flagship APS-C DSLR is a terrific action camera, able to shoot up to 31 RAW or 1090 Large Fine full-res JPEGs at 10 fps while continuing to autofocus, courtesy of a new 65-point AF system. The center AF point is functional down to EV -3, and at f/8, handy for photographers who like to use teleconverters and low-light specialists. A new 20.2-megapixel APS-C sensor (based on the one introduced in the EOS 70D) features next-generation Dual Pixel CMOS AF with on-sensor phase-detection AF for live view and video shooting, while dual DIGIC 6 processors provide quick performance, and make possible advanced noise reduction that gives the camera a normal ISO range of 100-16000 for both still and video, and is expandable to 51200. A 3.0-inch, 1.04M-dot LCD monitor enhances live viewing (but doesn't tilt or rotate).

Video capabilities are extensive, including 1080 at 60p/30p/24p, 720 at 60p and 640x480 at 30 fps, in both MOV and MP4, and uncompressed HDMI out. For smoother video capture, speed and sensitivity

of the Movie Servo AF can be adjusted.

The magnesium-alloy chassis is both dust- and weather-sealed, and the shutter is rated at 200,000 cycles. Images can be stored on CompactFlash (UDMA-compatible) or SD/SDHC/SDXC cards (UHS-I-compatible). There's even built-in GPS, which can add to each image's metadata the latitude, longitude, elevation and direction the camera was pointed. The 7D Mark II is also the first EOS model to have a built-in intervalometer for time-lapse sequences. The camera even can automatically correct for vignetting, chromatic aberration and distortion.

The EOS 7D Mark II can use all EOS lenses, full-frame EF and APS-C EF-S, which currently range from an 8-15mm fisheye zoom and a 10-22mm superwide zoom to an 800mm supertelephoto, as well as the manual-focus TS-E tilt-shift optics and MP-E 65mm f/2.8 1-5x macro lens. With the sensor's 1.6X crop factor, photographers have the ability to handle wildlife, landscapes and anything else.

Estimated Street Price: \$1,799.



STANDOUT FEATURE:
10 fps with excellent AF



The locking mode dial makes it easy to switch modes when you want to, and hard to do it accidentally.



The Quick Control Dial can be used to set exposure compensation without the need to press an EC button first.



The large LCD panel atop the camera provides easy access to info when making camera settings.



The eye-level pentaprism viewfinder shows 100% of the actual image area (in DX mode; 97% in 1.3X crop mode).



The camera shares its predecessor's nice 3.2-inch, 1229K-dot RGBW LCD monitor.

Like its predecessor, the new D7200 has two slots for SD/SDHC/SDXC cards.

NIKON D7200

STANDOUT FEATURE:
A bigger buffer means many more shots in servo shooting

Nikon's successor to the D7100 addresses the main shortcoming of that fine camera and adds a number of useful improvements. The biggest improvement is a larger buffer: The D7200 can shoot up to 27 12-bit lossless-compressed NEF (RAW) images, 18 14-bit lossless-compressed NEF images and 100 Large/Fine JPEGs in a burst (vs. 7, 6 and 33, respectively, with the D7100). Maximum advance rate remains 6 fps (7 in 1.3X crop mode).

EXPEED 4 processing (vs. EXPEED 3 in the D7100) provides improved image quality, better battery life and a normal ISO range of 100-25600 (vs. 100-6400 for the D7100). There are also BW1 and BW2, which let you shoot monochrome images at ISO 51200 and 102400, respectively. Both cameras feature 24-megapixel DX (APS-C) CMOS image sensors without the OLPF (AA) filter, but the D7200 has 24.2 effective megapixels vs. 24.1 for the D7100.

A new Advanced Multi-CAM 3500 II DX AF sensor module retains the D7100's 51-point AF capabilities, but can now

function down to EV -3 (the center point can autofocus at f/8, handy when using a teleconverter). Other improvements over the D7100 include 1080 video at 60p (in 1.3X crop mode), time-lapse up to 9999 frames, auto ISO in manual mode, zebra stripes in live view, improved viewfinder coatings and built-in WiFi with NFC for easy connection to compatible mobile devices.

The D7200 can use a wide range of AF Nikkor lenses, not just the ones with built-in AF motors (AF-S and AF-I). Currently, Nikon offers AF-S lenses from a 10-24mm superwide zoom to an 800mm supertelephoto, plus 1.4X, 1.7X and 2.0X AF teleconverters. Dimensions are 5.4x4.2x3.0 inches and 23.9 ounces.

Estimated Street Price: \$1,199.95 (body only); \$1,699.95 (with 18-140mm kit zoom).

NIKON D750

The D750 from Nikon combines a 24.3-megapixel, full-frame CMOS sensor with EXPEED 4 processing to deliver enhanced image quality and a normal ISO range of 100-12800 (expandable to 50-51200), providing a fine blend of image quality, low-light performance and reach. There are also 1.2X (16.7 megapixels) and 1.5X DX (10.3 megapixels) crop modes for flexibility.

The AF system is similar to the one used on the flagship pro D4S, but features the Advanced Multi-Cam 3500FX II AF module, newer than the one in the D4S, which can function in light levels as dim as EV -3, a stop dimmer than the D4S's EV -2. Eleven of the 51 AF sensors function as cross-types with lens/teleconverter combos as slow as f/8, great news for wildlife photographers and others who crave more reach. Group Area AF mode also improves the ability to capture action subjects against busy backgrounds.

A large buffer permits shooting long sequences at maximum resolution: 87 Large Fine JPEGs or 33 12-bit compressed NEF (RAW), even 15 14-bit losslessly compressed NEF images. The top shooting speed of 6.5 fps with AF for each frame is faster than any current full-frame Nikon DSLR except the pro D4S (which can do 11 fps, but is only 16 megapixels and costs more than twice

STANDOUT FEATURE:

Lots of bang for the buck

as much). Video features are the same as for the D810, including both 1080 and 720 at 60p, smooth time-lapse shooting and a built-in stereo microphone, plus jacks for an external mic and headphones.

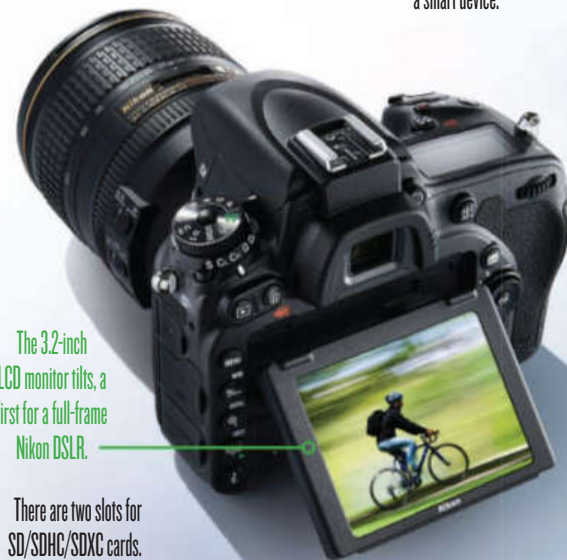
Compact for a full-frame DSLR, the D750 features a monocoque design with a front body and cover of carbon-fiber-reinforced thermoplastics, plus rear and top covers of magnesium alloy, and is sealed against dust and rain. The 3.2-inch, 1229K-dot LCD monitor offers the same specs as the D810's, but tilts up 90° and down 75° for easy odd-angle shooting in Live View and video modes.

The D750 can use all current AF and AF-S Nikkor lenses, but will automatically crop to DX (APS-C) format when a DX lens is attached. Full-frame lenses range from a 14mm superwide to an 800mm super-tele, plus a series of manual-focus PC-E tilt-shift perspective-control lenses. There are also 1.4X, 1.7X and 2.0X teleconverters.

Estimated Street Price: \$1,999.95.



The D750 is the first FX (full-frame) Nikon DSLR with built-in WiFi, which makes it easy to transfer images wirelessly to your iPhone or iPad, and even operate the camera from a smart device.



The 3.2-inch LCD monitor tilts, a first for a full-frame Nikon DSLR.

There are two slots for SD/SDHC/SDXC cards.



Instead of a built-in flash, the K-3 II has built-in GPS, switched on and off via the GPS button.



Like all Pentax DSLRs, the K-3 II can use virtually all Pentax lenses, even (via adapter) old screw-mount and medium-format optics, but performs best with the current ones.

The big pentaprism viewfinder shows 100% of the actual image area, with 0.95X magnification (50mm f/1.4 lens at infinity).

PENTAX K-3 II

The new K-3 II improves on the 17-month-old original flagship K-3 DSLR in a number of ways. The 24.35-megapixel APS-C CMOS sensor now uses the camera's all-direction sensor-shift shake-reduction mechanism for sharper images, but also for the new Pixel Shift Resolution System. With PSR, the K-3 II makes four images of the same scene, shifting the sensor by a single pixel from each image, then combines them into a single composite image with better color and detail. The shift assures that every pixel site receives data for all three primary colors (red, green and blue), doing away with the need for interpolation of colors that most Bayer-sensor cameras require. (This feature is for stationary subjects only.) The absence of the AA filter also makes for sharper images where moiré isn't a problem; in situations where moiré appears, you can activate the user-adjustable sensor-shift AA filter simulator to eliminate it.

Pentax's Astrotracer feature (requiring an optional accessory with previous cameras) is built into the K-3 II, using the sensor-shift mechanism and built-in GPS to sync the sensor movement to the movement of stars so they appear as single points rather than

STANDOUT FEATURE:

The flagship APS-C DSLR's versatile all-direction, sensor-shift shake-reduction mechanism acquires even more talents

star trails. (You can still do star-trail images, if you wish.)

The Shake Reduction feature itself has been improved, now providing 4.5 EV of correction for camera shake vs. 3.5 for the original K-3.

Retained from the original K-3 are the weather-sealed, cold- and dust-resistant, magnesium-alloy body, 200,000-cycle shutter, 27-point SAFOX 11 AF system (with 25 cross-type points) that functions in light levels as dim as EV -3, ISO settings from 100-51200 and 8.3 fps shooting.

The K-3 II uses the same LI90 lithium-ion battery as the K-5 cameras (good news for those upgrading to the new body); an optional D-BG5 Battery Grip can use 6 AAs or a second LI-90 and provides vertical-format shooting controls. Dimensions are 5.2x3.9x3.1 inches and 25.2 ounces.

Estimated Street Price: \$1,099.95.

PRO DSLRs

THE LATEST HIGH-END MODELS

BY MIKE STENSVOld

STANDOUT FEATURE:

Aimed at still photographers, the EOS 5DS models have the most megapixels in a full-frame DSLR

CANON EOS 5DS AND EOS 5DS R

Canon has returned to the top of the DSLR megapixel mountain with a pair of 50.6-megapixel, full-frame EOS 5D models. The EOS 5DS and 5DS R are identical except the R model's low-pass filter effect has been cancelled to further increase sharpness (at the risk of moiré in images of fine repeating patterns). There are also 1.3X (APS-H) and 1.6X (APS-C) crop modes at 30.5 and 19.6 megapixels, respectively, which are handy when you don't need huge 50-megapixel files. Dual DIGIC 6 processors provide the power to capture such large files, at speeds up to 5 fps. Normal ISO range is 100-6400, expandable to 50-12800; low-light specialists will prefer the EOS 5D Mark III.

The 5DS models feature a 150K-pixel RGB+IR metering sensor that provides improved exposure metering and white-balance accuracy in a wide range of situations over the 5D Mark III's. The 61-point AF system (with up to 41 cross-type points, 5 double-cross types and one cross-type

that functions at f/8) is the same as the 5D III's, but offers better focus tracking because it's linked to the better metering system.

More than recent higher-end EOS DSLRs, the 5DS models are aimed at still photographers, but they do provide video features similar to those of the EOS 5D Mark III (which remains in the EOS lineup), including 1080 at 30p/25p/24p, 720 at 60p/50p and 480 at 30p/25p, but there's no headphone jack or clean HDMI-out. Continuous Movie Servo AF has been added, and you now can produce 1080/30p time-lapse movies in-camera. The EOS 5DS cameras use the same LP-E6 battery as the EOS 5D III, and each measures 6.0x4.6x3.0 inches, with a weight of 29.8 ounces.

Estimated Street Price: \$3,699 (5DS); \$3,899 (5DS R).



A new mirror lock-up offers user-selectable release-time lag.

The EOS 5DS and 5DS R are identical except for the AA filter and model logo.

A wide LCD panel atop the camera provides access to many shooting features.

LEICA S (TYP 007)

The newest member of Leica's S medium-format camera family has the same ergonomic form factor (it looks like a big "35mm" DSLR), but offers lots more at a competitive price. Resolution is still 37.5 megapixels, but now it's courtesy of a 45x30mm CMOS sensor (with no low-pass filter) rather than a CCD. That, in turn, makes it possible to provide video (4K at 30p/24p, plus full HD and Super 35 video capture).

The camera can capture the massive files at up to 3.5 fps, and has a normal ISO range of 200-6400 (expandable down to 100). For action, there's predictive AF, and precision focusing in live view with focus peaking via the 3.0-inch, 921K-dot LCD monitor.

Unlike other medium-format cameras, the S (Typ 007) has both WiFi and GPS built in, so you can operate your camera remotely and wirelessly from your iPhone, operate it tethered via USB 3.0 using Leica's Image Shuttle 3.0 software, and geotag your images as you shoot, embedding location data in each image's EXIF metadata. Note that the S (Typ 007) shouldn't be confused with the earlier



S (Typ 006), which is still available.

Images can be stored on CompactFlash or SD/SDHC/SDXC media as 16-bit DNG and/or JPEG files. The shutter provides speeds from 125 to 1/4000 seconds, and is tested to 150,000 cycles. The sturdy magnesium body measures 6.3x3.1x4.7 inches, weighs 2.8 pounds, and is weather-sealed. Like its S-series siblings, the S (Typ 007) can use all Leica S-mount lenses, which currently number 10 (six of which contain central leaf shutters that allow for flash sync up to 1/1000 seconds) and includes a first-rate tilt-shift lens. Adapters allow mounting Hasselblad and Contax lenses, while retaining AF and automatic aperture control.

Estimated Street Price: \$16,900.



STANDOUT FEATURE:

The only medium-format camera that can shoot full-res still images at 3.5 fps—and shoot 4K video at 24 fps

The S (Typ 007) features a clean design, not cluttered with buttons and switches.

You can mount on-camera flash in the hot-shoe, or connect studio units via LEO or a standard flash plug.

The switch to the left of the finder eyepiece switches the camera on, and selects in-body focal-plane or in-lens central-shutter operation (with compatible lenses).



PRO DIGITAL “RANGEFINDERS”

Leica rangefinder cameras have always been part of the same *Family* as other cameras, but a different *species*. While DSLR cameras use a mirror and a viewfinder, Leica cameras use a different focusing and image capture system than a DSLR. That makes them a bit hard to add to a buyer's guide chart. They're not an SLR, they're not a mirrorless system. Here, then, are the two professional-level Leica digital cameras released this year, alongside the pro DSLRs that are their chief competitors.

LEICA Q (TYP 116)

Leica says that their Q camera is an “enthusiast” model, though with a \$6,000 price tag, it takes a certain kind of enthusiast to buy it. We think the Q is the travel-camera model for the Leica professional.

While most enthusiast cameras have an APS-C or a Micro Four Thirds system, the Leica Q has a full-frame sensor. The fixed 28mm f/1.7 lens is incredibly fast and features Leica's legendary glass. The 24-megapixel sensor has no anti-aliasing filter, resulting in incredibly sharp images. Thanks to the close-focus lens that can capture subjects as close as seven inches away, the Q is as comfortable capturing macros as it is portraits.

Leica has also given this “enthusiast” camera the highest-resolution electric viewfinder in the market, a 3.0-inch touch-screen LCD with 1.04M dots and 10 fps continuous shooting, which is faster than some pro systems. Estimated Street Price: \$6,900.



LEICA M MONOCHROM (TYP 246)

It takes a confident company to create a camera that can *only* capture monochrome images, but Leica has never been shy about producing cameras they say their customers want—or, in this case, lust after.

All digital cameras are really monochrome cameras—an imaging sensor only measures intensity of light, not the color of it. In order to make a color camera, manufacturers put a color filter over the pixels. The M Monochrome, then, is essentially the Leica M (Typ 240) without the color filter used to capture color images. By ditching the RGB filter, the company has been able to increase the ISO sensitivity up to 25,000 (versus 10,000 for the Typ 240). Leica has also improved the LCD viewfinder on the M Monochrome (it now has 921,000 dots) for a much better image capture experience. Estimated Street Price: \$7,500.



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	Image Sensor	Focal-Length Factor	Max. Resolution (Pixels)	Pixel Size (Microns)	Sensor Cleaning	Eye-Level Viewfinder	LCD Monitor	Built-In WiFi	Top Video
Canon EOS M	24.2 MP CMOS	1.6X (APS-C)	6000x4000	3.7	Yes	Opt. EVF	3.0-in. 1040K TiTo	Yes	1080/30p
Fujifilm X-A2	16.3 MP CMOS	1.5X (APS-C)	4896x3264	4.8	Yes	None	3.0-in. 920K Ti	Yes	1080/30p
Fujifilm X-T10	16.3 MP X-Trans II	1.5X (APS-C)	4896x3264	4.8	Yes	EVF	3.0-in. 920K TiK	Yes	1080/60p
Nikon I J5	20.8 MP CMOS	2.7X (1-in.)	5568x3712	2.4	Yes	None	3.0-in. 1037K Ti	Yes	1080/60p
Olympus OM-D E-M5 II	16.05 MP Live MOS	2.0X (M43)	4608x3456	3.8	Yes	EVF	3.0-in. 1036K TiTo	Yes	1080/60p
Olympus OM-D E-M10 II	16.1 MP Live MOS	2.0X (M43)	4608x3456	3.8	Yes	EVF	3.0-in. 1037K TiTo	Yes	1080/60p
Panasonic Lumix DMC-G7	16.0 MP Live MOS	2.0X (M43)	4592x3448	3.8	Yes	EVF	3.0-in. 1040K TiTo	Yes	4K/30p
Panasonic Lumix DMC-GF7	16.0 MP Live MOS	2.0X (M43)	4592x3488	3.8	Yes	None	3.0-in. 1040K TiTo	Yes	1080/60p
Panasonic Lumix DMC-GX8	20.3 MP Live MOS	2.0X (M43)	5184x3888	3.3	Yes	EVF	3.0-in. 1040K TiTo	Yes	4K/30p
Samsung NX1	28.2 MP BSI CMOS	1.5X (APS-C)	6480x4320	3.6	Yes	EVF	3.0-in. 1036K TiTo	Yes	4K/30p
Samsung NX500	28.2 MP BSI CMOS	1.5X (APS-C)	6480x4320	3.6	Yes	None	3.0-in. 1036K TiTo	Yes	4K/30p
Sony a7 II	24.3 MP CMOS	1.0X (full-frame)	6000x4000	6	Yes	EVF	3.0-in. 1228K Ti	Yes	1080/60p
Sony a7R II	42.4 MP BI CMOS	1.0X (full-frame)	7952x5304	4.5	Yes	EVF	3.0-in. 1228K Ti	Yes	4K/30p
Sony a7S II	12.2 MP CMOS	1.0X (full-frame)	4840x2832	8.4	Yes	EVF	3.0-in 1228k Ti	Yes	4K/30p

ENTRY-LEVEL DSLRs

Canon EOS Rebel T6s	24.2 MP CMOS	1.6X (APS-C)	6000x4000	3.7	Yes	SLR	3.0-in. 1040K TiTo	Yes	1080/30p
Canon EOS Rebel T6i	24.2 MP CMOS	1.6X (APS-C)	6000x4000	3.7	Yes	SLR	3.0-in. 1040K TiTo	Yes	1080/30p
Nikon D5500	24.2 MP CMOS	1.5X (APS-C)	6000x4000	3.9	Yes	SLR	3.2-in. 1037K TiTo	Yes	1080/60p
Pentax K-S2	20.1 MP CMOS	1.5X (APS-C)	5472x3648	4.3	Yes	SLR	3.0-in. 921K Ti	Yes	1080/30p

ADVANCED DSLRs

Canon EOS 7D Mark II	20.2 MP CMOS	1.6X (APS-C)	5472x3648	4.1	Yes	SLR	3.0-in. 1040K	No	1080/60p
Nikon D7200	24.2 MP CMOS	1.5X (APS-C)	6010x4010	3.9	Yes	SLR	3.2-in. 1229K	Yes	1080/30p
Nikon D750	24.3 MP CMOS	1.0X (full-frame)	6016x4016	6	Yes	SLR	3.2-in. 1229K Ti	Yes	1080/60p
Pentax K-3 II	24.35 MP CMOS	1.5X (APS-C)	6016x4000	3.9	Yes	SLR	3.2-in. 1037K	No	1080/60i

PRO DSLRs

Canon EOS 5DS	50.3 MP CMOS	1.0X (full-frame)	8688x5792	4.1	Yes	SLR	3.2-in. 1040K	No	1080/30p
Canon EOS 5DS R	50.3 MP CMOS	1.0X (full-frame)	8688x5792	4.1	Yes	SLR	3.2-in. 1040K	No	1080/30p
Leica S (Typ 007)	37.5 MP CMOS	0.8X (medium format)	7500x5000	6	No	SLR	3.0-in. 921K	Yes	4K/24p

PRO-QUALITY COMPACTS

					LENS**				
Canon PowerShot G3 X	20.2 MP CMOS	2.7X (1-in.)	5472x3680	2.4	24-600mm	Optional	3.2-in. 1620K TiTo	Yes	1080/60p
Fujifilm X100T	16.3 MP X-Trans II	1.5X (APS-C)	4896x3264	4.8	35mm	Hybrid	3.0-in. 1040K	Yes	1080/60p
Ricoh GR II	16.2 MP CMOS	1.5X (APS-C)	4928x3264	4.8	28mm	None	3.0-in. 1230K	Yes	1080/30p
Sigma dp0 Quattro	29 MP Foveon X3	1.5X (APS-C)	5424x3616	Not stated	21mm	None	3.0-in. 920K	No	No video
Sigma dp3 Quattro	29 MP Foveon X3	1.5X (APS-C)	5424x3616	Not stated	75mm	None	3.0-in. 920K	No	No video
Sony RX100 IV	20.1 MP BI CMOS	2.7X (1-in.)	5472x3648	2.4	24-70mm	EVF	3.0-in. 1229K Ti	Yes	4K/30p

* MAXIMUM FRAME RATE WITH AF ** FOCAL LENGTH (35MM-CAMERA EQUIVALENT) OF BUILT-IN LENS

AF System	Normal ISO Range	Shutter Speeds	Max Frame Rate*	Metering	Built-In Flash	Storage Media	Power Source	Dimensions	Weight
49-pt.	100-12800	30-1/4000	2.4 fps	384-zone, CW, spot	Yes	SD/SDHC/SDXC	LP-EI7	4.4x2.7x1.7 in.	11.3 oz.
49-area	200-6400	30-1/4000	5.6 fps	256-seg., CW, spot	Yes	SD/SDHC/SDXC	NP-WI26 li-ion	4.6x2.6x1.6 in.	10.6 oz.
Hybrid	200-6400	30-1/4000	8 fps	256-seg., CW, spot	Yes	SD/SDHC/SDXC	NP-WI26 li-ion	4.7x3.3x1.6 in.	11.7 oz.
Hybrid	160-12800	30-1/16000	20 fps	Matrix, CW, spot	Yes	microSD/SDHC/SDXC	EN-EL24 li-ion	3.9x2.4x1.3 in.	8.2 oz.
81-area	200-25600	60-1/8000	5 fps	324-area, CW, spot	Incl. Acc.	SD/SDHC/SDXC	BLN-1 li-ion	4.9x3.3x1.8 in.	14.7 oz.
81-area	100-25600	60-1/4000	4 fps	324-area, CW, spot	Yes	SD/SDHC/SDXC	BLS-50 li-ion	4.7x3.3x1.8 in.	12.1 oz.
49-area	200-25600	60-1/4000	6 fps	1728-zone, CW, spot	Yes	SD/SDHC/SDXC	li-ion	4.9x3.4x3.1 in.	12.7 oz.
23-area	200-25600	60-1/16000	5 fps	1728-zone, CW, spot	Yes	SD/HC/XC	li-ion	4.2x2.6x1.3 in.	8.3 oz.
49-area	200-25600	60-1/8000	8 fps	Matrix, CW, spot	Yes	SD/SDHC/SDXC	li-ion	5.2x3.1x2.5 in.	17.2 oz.
Hybrid	100-25600	30-1/8000	15 fps	221-seg., CW, spot	Yes	SD/SDHC/SDXC	BPI900 li-ion	5.5x4.0x2.6 in.	19.4 oz.
Hybrid	100-25600	30-1/6000	9 fps	221-seg., CW, spot	Not Stated	SD/SDHC/SDXC	BPI130 li-ion	4.7x2.5x1.7 in.	10.1 oz.
117-pt.	100-25600	30-1/8000	5 fps	Multi-zone, CW, spot	No	SD/HC/XC, MS	NP-FW50 li-ion	5.0x3.8x2.4 in.	19.6 oz.
399-pt.	100-25600	30-1/8000	5 fps	Multi-zone, CW, spot	No	SD/HC/XC, MS	NP-FW50 li-ion	5.0x3.8x2.9 in.	22.1 oz.
169-pt.	100-102400	30-1/8000	5 fps	Multi-zone, CW, spot	No	SD/HC/XC, MS	NP-FW50 li-ion	5.0x3.8x2.4 in.	20.6 oz.
19-pt.	100-12800	30-1/4000	5 fps	7560-pixel, CW, spot	Yes	SD/SDHC/SDXC	LP-E17 li-ion	5.2x4.0x3.1 in.	18.4 oz.
19-pt.	100-12800	30-1/4000	5 fps	7560-pixel, CW, spot	Yes	SD/SDHC/SDXC	LP-E17 li-ion	5.2x4.0x3.1 in.	18.0 oz.
39-pt.	100-25600	30-1/4000	5 fps	2016-pixel, CW, spot	Yes	SD/SDHC/SDXC	EN-EL14a li-ion	4.9x3.9x2.8 in.	14.9 oz.
11-pt.	100-51200	30-1/6000	5.5 fps	77-seg., CW, spot	Yes	SD/HC/XC, Flucard	D-LI190 li-ion	4.8x3.6x2.6 in.	21.7 oz.
65-pt.	100-16800	30-1/8000	10 fps	150K-pixel, CW, spot	Yes	CF & SD/HC/XC	LP-E6N li-ion	5.9x4.4x3.1 in.	28.9 oz.
51-pt.	100-25600	30-1/8000	6 fps	2016-pixel, CW, spot	Yes	SD/SDHC/SDXC	EN-EL15 li-ion	5.4x4.2x3.0 in.	23.9 oz.
51-pt.	100-12800	30-1/4000	6.5 fps	91,000-pixel, CW, spot	Yes	2 SD/HC/XC	EN-EL15 li-ion	5.5x4.5x3.1 in.	26.5 oz.
27-pt.	100-51200	30-1/8000	8.3 fps	86,000-pixel, CW, spot	Yes	2 SD/HC/XC, Flucard	D-LI90 li-ion	5.2x3.9x3.1 in.	25.2 oz.
61-pt.	100-6400	30-1/8000	5 fps	150K-pixel, CW, spot	No	CF, SD/SDHC/SDXC	LP-E6 li-ion	6.0x4.6x3.0 in.	29.8 oz.
61-pt.	100-6400	30-1/8000	5 fps	150K-pixel, CW, spot	No	CF/SDHC/SDXC	LP-E6 li-ion	6.0x4.6x3.0 in.	29.8 oz.
1-pt.	200-6400	125-1/4000	3.5 fps	5-field, CW, spot	No	CF, SD/SDHC/SDXC	li-ion	6.3x3.1x4.7 in.	2.8 lbs.
31-pt.	125-6400	15-1/2000	3.2 fps	Eval., CW, spot	Yes	SD/SDHC/SDXC	NB-10L li-ion	4.9x3.0x4.2 in.	24.3 oz.
Hybrid	200-6400	30-1/4000	6 fps	256-zone, CW, spot	Yes	SD/SDHC/SDXC	NP-95 li-ion	5.0x2.9x2.1 in.	14.1 oz.
CDAF	100-25600	30-1/4000	4 fps	Multi, CW, spot	Yes	SD/SDHC/SDXC	DB-65 li-ion	4.6x2.5x1.4 in.	7.8 oz.
9-pt.	100-6400	30-1/2000	Not Stated	Eval., CW, spot	No	SD/SDHC/SDXC	BP-51 li-ion	6.4x2.6x4.9 in.	17.6 oz.
9-pt.	100-6400	30-1/2000	Not Stated	Eval., CW, spot	No	SD/SDHC/SDXC	BP-51 li-ion	6.4x2.6x4.0 in.	16.4 oz.
Not Stated	125-12800	30-1/32000	Not Stated	Multi, CW, spot	Yes	SD/HC/XC, MS	NP-BX1	4.0x2.4x1.6 in.	9.6 oz.

PRO COMPACTS

SMALL CAMERAS WITH BIG SENSORS
PUT SUPERIOR IMAGE QUALITY IN YOUR POCKET

BY MIKE STENSVOID

CANON POWERSHOT G3 X

Canon's top compact camera, the PowerShot G3 X is the most rugged of the flagship G-series, with dust and weather sealing about equal to that of the EOS 70D DSLR. It has a built-in 24-600mm (equivalent) $f/2.8-5.6$ zoom, which can cover a very wide range of shooting needs. Built-in intelligent image stabilization helps keep things sharper at all focal lengths. The G3 X features EOS-like control (a first for the G-series) and can shoot 5.9 fps with continuous autofocus. The 20.2-megapixel, one-inch CMOS sensor and DIGIC 6 processor optimize image quality at ISO settings to 12800. The 3.2-inch, 1.62M-dot LCD monitor can be supplemented with an optional 2.36-megapixel EVF (recommended for handheld shooting at longer focal lengths). There's Full 1080 HD video at 60p/30p/24p, and built-in WiFi with NFC adds wireless file transfer and remote control via smart device. Dimensions are 4.9x3.0x4.2 inches and 24.0 ounces.

Estimated Street Price: \$999.99.



FUJIFILM X100T

The third generation of Fujifilm's popular APS-C fixed-lens compact, the X100T features the company's 16.3-megapixel Trans II CMOS sensor, with a unique RGB filter array that minimizes moiré and does away with the need for an image-blurring anti-aliasing filter and on-sensor phase-detect sensors. The 23mm $f/2$ lens has an equivalent field of view to a 35mm lens on a full-frame camera. The unique Advanced Hybrid Viewfinder provides optical and electronic viewing, with a new electronic rangefinder manual-focusing feature. The external LCD panel has been increased to 3.0 inches and 1.04M dots from the X100S's 2.8-inch, 460K unit. Built-in WiFi makes it easy to transfer images wirelessly to a mobile device and operate the camera remotely. An electronic shutter feature provides silent shooting with speeds up to 1/32,000. You can shoot 1080 HD video at up to 60p, and there's a built-in intervalometer. A new Classic Chrome setting has been added to the film-simulation modes. Dimensions are 5.0x2.9x2.1 inches and 14.1 ounces.

Estimated Street Price: \$1,299.



RICOH GR II

Adding built-in WiFi with easy NFC connection to its flagship compact digital camera, Ricoh has produced the GR II. It retains its predecessor's compact dimensions (4.6x2.5x1.4 inches, 7.8 ounces), 16.2-megapixel APS-C CMOS sensor with no anti-aliasing filter and 28mm (35mm-camera equivalent) f/2.8 lens with 9-blade diaphragm for soft-focus bokeh. Seventeen in-camera effects include a new HDR Tone one. There's a built-in flash unit, plus the ability to control compatible Pentax flash units wirelessly off-camera. A web-based app lets you control camera settings via almost any browser. The GR II can shoot up to 10 fps (4 fps with AF), as well as 1080/30p video. The 3.0-inch, 1230K-dot LCD monitor can be supplemented with an optional shoe-mount optical finder.

Estimated Street Price: \$799.



SIGMA dp0 QUATTRO/ dp3 QUATTRO

Sigma started the big-sensor/small-camera genre when it put the unique Foveon sensor from its DSLR into a compact body and produced the DP1 in 2007. Sigma upgraded the sensor and added a distinctive camera shape with the dp01 and dp02 Quattro in 2014, and now has filled out the Quattro series with the dp0 and dp3. All models feature the same unique form factor and 29-megapixel Foveon X3 stacked sensor that records all three primary colors at every pixel site, along with a Sigma lens designed specifically for use with the sensor. The cameras differ mainly in the built-in lens: 14mm f/4 (dp0); 19mm f/2.8 (dp1); 30mm f/2.8 (dp2); and 50mm f/2.8 (dp3). The APS-C sensor's 1.5X crop factor makes these frame like 21mm, 28mm, 45mm and 75mm lenses on a full-frame camera, respectively. All are 6.5 inches wide and 2.6 inches high; depth varies from 3.2 to 4.9 inches, depending on the lens.

List Price: \$999 (each).

SONY RX100 IV

Sony's fourth-generation RX100 IV continues a tradition of combining excellent image quality with a pocketable package—and then some. Its new 20.1-megapixel one-inch Exmor RS CMOS sensor features a unique stacked configuration, with the pixel area on top, the high-speed signal processing circuitry below and an on-chip DRAM memory chip below that. The 5X faster readout made possible by this design provides 16 fps full-res still shooting with no blackout (but focus fixed at the first frame; 5.5 fps with AF), better high ISO performance, top shutter speed of 1/32,000, plus 4K video in-camera at 30p, super slow-motion up to 960 fps (40x) at 800x270 and full-pixel readout video with no binning or line-skipping. The tilting, 3.0-inch, 1229K-dot external monitor is complemented by a 2.35-megapixel EVF. AF performance has also been sped up. Dimensions are 4.0x2.3x1.5 inches and 9.6 ounces.

Estimated Street Price: \$1,000.



ACTION CAMERAS

THE BEST TOOL TO CAPTURE STILL AND VIDEO
WHEN YOU CAN'T KEEP YOUR HANDS ON A CAMERA

BY THEANO NIKITAS

Action cameras are everywhere—on surfboards, skateboards, bicycle handlebars and even on helmets for first-person, point-of-view video. In some ways, the mounts available for these small devices are almost as important as camera specifications. While an action camera now seems to be a necessity for those who practice extreme sports, you don't have to be an adventurer to capture images of special occasions or everyday life—just stow a little action cam in your pocket or bag, bring along some mounts, and you're good to go. Here's a quick look at some of the coolest models on the market.



GOPRO HERO4 BLACK

GoPro's top-of-the-line model, the HERO4 Black captures 4K video, up to 240 fps slow motion and 12-megapixel stills, and can shoot at extremely wide angles. Continuous still capture reaches speeds of up to 30 fps, an automatic Time Lapse video creation mode is available, and the camera is equipped with WiFi and Bluetooth. On the video side, the HERO4 offers 4K video capture at 30p/25p/24p (limited to 24p in Super-View), along with 2.7K and lower-resolution H.264 MP4 video. Unique to this GoPro model is its analog-to-digital converter for compatibility with professional low-sensitivity external mics for higher-quality audio. Another important video feature is ProTune, which enables high-bit-rate capture for lower compression/higher quality, increased dynamic range and a flat profile. The latter requires more effort in postprocessing, but the results can be customized. These files are also easier to integrate with other, non-GoPro video footage. Available in three editions: Standard, Surf and Music, the former two come equipped with a protective

case that's waterproof to 131 feet, each with its own mounts. The Music edition is designed for capturing performances and is bundled with everything you need to mount the camera to an instrument or a mic stand. There are tons of GoPro and third-party accessories for just about

any activity imaginable. Be sure to download the free GoPro App for remote camera operation and the free GoPro Studio software for video editing.

Estimated Street Price: \$499.

GOPRO HERO4 SILVER

Although similar in most ways to its HERO4 Black counterpart and available in the same three editions, the Silver isn't quite as well equipped on the video front. This less expensive model's video capabilities are limited to a maximum of 4K at 15p/12.5p and a bit-rate speed of up to 45 Mb/s (versus the HERO4 Black's 60 Mb/s), so don't expect the same smooth video quality that the HERO4 Black delivers in 4K capture. The Silver does offer more options in

2.7K (30p/25p/24p) and a full complement of capture modes from 60p to 24p in full 1080p HD. The Silver lacks the ADC (analog-to-digital converter) of the Black, but is equipped with external mic jacks. On the plus side, the Silver model comes with a touch-screen LCD for quick and easy operation, while HERO4 Black owners would have to purchase the optional LCD Touch BacPac to get the same functionality.

Estimated Street Price: \$399.

GARMIN VIRB XE

With an all-new form factor designed to accommodate additional mounting options, the Garmin VIRB XE is a rugged, self-contained action camera that's waterproof to 50 meters without an additional case. Its hydrophobic, flat glass lens helps ensure droplet-free video whether underwater or transitioning up to the surface in the sea or a pool. The camera captures Full 1080p 60 video and 12-megapixel stills in bursts up to 30 fps. Notable are the multiple sensors, which record a wealth of G-Metrix data for various activities, including bike speed, water depth, wind

speed, elevation and more. Equipped with WiFi and Bluetooth, the VIRB offers a smartphone/tablet-compatible mobile app for live streaming, controlling and viewing multiple cameras. VIRB desktop software can also be downloaded. The camera comes with a 1-inch touch screen and can run for about two hours on a single charge when recording Full HD video. And, if you lose the VIRB, you can track it down with the last recorded GPS coordinates.

Estimated Street Price: \$399.



iON AIR PRO 3

The self-enclosed Air Pro 3 is encased by a one-piece aluminum barrel, which provides a rugged enclosure for the petite camera (1.45x1.45x4.3 inches/4.51 ounces). Built around a 12-megapixel sensor, the Pro 3 shoots stills at up to 10 fps and offers a time-lapse mode. For video, you'll find options for Full HD 1080 60p video, as well as 1280x720p at 120 fps for slow motion. A G-sensor provides 8 points of electronic image stabilization, and the included WiFi PODZ

attaches to the camera for wireless connectivity to mobile devices via the iON Air app. Currently, the only waterproof model in the Air Pro series, the Pro 3 doesn't require an additional case to accompany divers to a depth of 49 feet. The camera comes with a bundle that includes the WiFi PODZ, power adapter, camlock, short ball joint, USB cable, helmet mount and adhesive straps, tabletop tripod, storage pouch and free cloud storage. Additional accessories are available.

Estimated Street Price: \$249.



SONY X1000V 4K ACTION CAM

Housed in a shotgun mic-style body, the Sony X1000V 4K Action Cam is truly tiny at 0.96x2.04x3.5 inches and a weight of 4.02 ounces (with battery). Despite its diminutive stature, the X1000V is highly capable, capturing 4K video and 8.8-megapixel stills. A fast, f/2.8 wide-angle Zeiss Tessar lens provides a field of view of 170° (120° with SteadyShot image stabilization enabled). Some of its notable features include WiFi/NFC, GPS, Motion Shot LE (which captures an action sequence in a single frame), interval recording for time-lapse videos, burst speeds up to 10 fps, loop recording to ensure you don't miss the decisive moment and live streaming. A Live View wrist remote allows you to operate the camera, or multiple cameras (up to five), and view footage in playback;

the camera is compatible with Sony's PlayMemories apps. The X1000V takes advantage of XAVC S with its high bit-rate (up to 100 Mb/s for 4K; up to 50 Mb/s for Full HD) for high-quality video recording. The camera comes with a waterproof case with a depth rating of 32.81 feet; an optional underwater housing, rated for a depth of 197 feet, is available for \$50. The X1000V 4K Action Cam comes in two versions. Both come with an adhesive mount, rechargeable battery pack, microUSB cable and a waterproof case, with an option to include the Live View remote.

Estimated Street Price: From \$450.



LENSES

THE LATEST OPTICS FOR DSLR AND MIRRORLESS SYSTEMS

BY JON SIENKIEWICZ

If you've been happy with the kit lens that came with your DSLR, great, but you're in for a surprise when you step up to something better. Kit lenses are vanilla—and very useful, all things considered—but there's a whole world of options out there. If you're serious about your images, it's time to take a closer look at the menu.

In a nutshell, lenses are either zoom or prime (fixed focal length). Primes generally have large maximum apertures and generally outperform zooms. Zooms provide greater flexibility—you can compose different crops right in the viewfinder—but often are larger and slower. If two *f*-numbers are etched on a zoom, *f*/3.5-5.6, for example, the first is the aperture at the wide-angle setting and the second is the *f*-stop at telephoto. Baby, *f*/5.6 is slow. Primes and the best zooms have only one maximum aperture, and it's available at all times.

Full-frame DSLRs, which have sensors the same size as 35mm film, require lenses capable of transmitting a circle of light large enough to cover the entire sensor surface. Cameras with the smaller APS-C-sized sensors have smaller sensors, so they work with a wider array of lenses. You can easily use lenses made for full-frame cameras on crop-frame models, but not vice versa.

Another consequence stemming from differences in sensor size is effective focal length. On a full-sized-sensor DSLR, a 20mm has the same field of view that it would if it were used on a 35mm film camera. But on a crop-frame camera, a Nikon D90, for instance, the effective focal length becomes 30mm because the sensor is smaller, and only receives light from a portion of the sensor, effectively cropping the focal area.

Some lenses offer image stabilization. Different manufacturers give it different names—Canon calls it IS, Tamron, VC, for Vibration Compensation, etc.—but it



Canon EF 50mm *f*/1.8 STM

CANON

Canon introduced a number of lenses starting with the Canon EF 100-400mm *f*/4.5-5.6L II USM (\$2,999), EF 35mm *f*/1.4 II USM (\$1,799), EF 11-24mm *f*/4L USM (\$2,299) and EF 50mm *f*/1.8 STM (\$125), a remake of a classic. This 50mm lens features an STM motor, which acts with the Movie Servo AF mode on some DSLRs for nearly silent focusing—a real benefit when shooting video.



Fujinon XF90mm *f*/2 R LM WR

FUJIFILM

Things have been heating up for the Fujifilm X-series photographer with the release of new lenses for the company's mirrorless system. Additions to the company's renowned optics line are the Fujinon XF16-55mm *f*/2.8 R LM WR (\$1,049), XF16mm *f*/1.4 R WR (\$999) and the short telephoto XF90mm *f*/2 R LM WR (\$950). Fujifilm also announced two new lenses available only bundled in a kit, the XC50-230mm *f*/4.5-6.7 OIS II and XC16-50mm *f*/3.5-5.6 OIS II.

all boils down to technology that corrects automatically for camera shake and allows you to take pictures at lower shutter speeds without that blurry motion smear. Given the choice, opt for the stabilized version—your images will be sharp more often—unless, of course, you have a camera



Lensbaby Velvet 56mm f/1.6

LENSBABY

The all-manual Lensbaby Velvet 56mm f/1.6 lens (\$500-\$600, depending on model) features a singlet-doublet-singlet optical design and delivers a dreamy glowing effect, perfect for portraits. It also provides 1:2 magnification and manual focus to 5 inches for close-ups. Stopping down to the minimum aperture (f/16) reduces intentional blurring effects. It's available for Canon, Nikon, Sony A and E, Fujifilm X, Micro 4/3 and Samsung NX.



Olympus M.ZUIKO Digital ED 8mm f/1.8 Fisheye PRO

OLYMPUS

Olympus increased the range of lenses available for its and Panasonic's Micro Four Thirds cameras with the arrival of three new lenses—two zooms and a prime fisheye. The zooms are the M.ZUIKO Digital ED 14-150mm f/4-5.6II (\$599) and M.ZUIKO Digital ED 7-14mm f/2.8 PRO (\$1,299), and the prime lens is the remarkable M.ZUIKO Digital ED 8mm f/1.8 Fisheye Pro (\$999). All the lenses in the PRO line feature outstanding edge-to-edge optical performance and excellent image quality.

PANASONIC

Panasonic released three lenses for the Micro Four Thirds system, the Panasonic LUMIX G Macro 30mm f/2.8 ASPH MEGA O.I.S. (\$400), LUMIX G 42.5mm f/1.7 ASPH POWER O.I.S. (\$368) and LUMIX G 25mm f/1.7 ASPH (\$400). The 30mm and 42.5mm feature Panasonic's popular and effective image stabilization, MEGA O.I.S.



Panasonic LUMIX G Macro 30mm f/2.8 ASPH MEGA O.I.S.



AF-S NIKKOR 24-70mm f/2.8E ED VR

NIKON

Nikon announced eight new lenses this year for their FX and DX cameras. FX shooters got the AF-S 300mm f/4E ED VR (\$1,997), AF-S 600mm f/4E FL ED VR (\$13,000), AF-S 500mm f/4E FL ED VR (\$10,297), AF-S 24mm f/1.8G ED (\$750), AF-S 200-500mm f/5.6E ED VR (\$1,400) and AF-S 24-70mm f/2.8E ED VR (\$2,397). DX shooters got the new AF-S DX 55-200mm f/4.5-5.6G VR II (\$350) and AF-S DX 16-80mm f/2.8-4E ED VR (\$1,097).



HD Pentax-D FA 150-450mm f/4.5-5.6ED DC AW

PENTAX

Ricoh introduced three lenses for the Pentax camera system. The HD Pentax-D FA* 70-200mm f/2.8ED DC AW (\$2,296) fills a slot found in virtually all manufacturer lineups, with an aperture of f/2.8 throughout the zoom range and a fast, silent AF system. Going longer, the HD Pentax-D FA 150-450mm f/4.5-5.6ED DC AW (\$1,976) is fast and compact, and is a welcomed addition to their fine lens lineup. The DA 18-50mm f/4-5.6 DC WR RE (\$259) gives shooters a versatile standard zoom.

that has stabilization built in, like most Sony DSLRs.

Terms like "aspheric" and "anomalous dispersion" glass elements can lead into the weeds of distraction. Most of this language describes optical properties that improve the final image. Aspheric describes a piece of glass that wasn't ground

in the traditional (easy) way, with a final shape that's not spherical. AD, or anomalous dispersion, means a special type of glass that's used to achieve more precise control of "chromatic aberrations" (CA). CA occurs because of light's natural tendency not to focus all colors on the same point.

SAMYANG

Rapidly becoming a household name, Samyang (also branded as Rokinon) lenses like the Samyang 100mm f/2.8 ED UMC Macro (\$550) make it easy to understand their rise in popularity. For macro use, it achieves a 1:1 maximum magnification ratio along with a minimum focusing distance of 1 foot. Designed for crop-frame (APS-C)-sensor cameras, it's available in all popular camera mounts including Samsung and Fujifilm, and performs like a fast, long telephoto when used on these models.



Samyang 100mm f/2.8 ED UMC Macro



Sony Vario-Sonnar T* 16-35mm f/2.8 ZA SSM II

SONY

Sony has released new lenses for both their E-mount mirrorless cameras and A-mount DSLR cameras. For A-series shooters, Sony introduced the 70-300mm f/4.5-5.6 G SSM II (\$1,200), Vario-Sonnar T* 24-70mm f/2.8 ZA SSM II (\$1,200) and Vario-Sonnar T* 16-35mm f/2.8 ZA SSM II (\$2,200). In the E-mount, the company introduced the FE 24-240mm f/3.5-6.3 OSS (\$975), FE 90mm f/2.8 Macro G OSS (\$1,100), Distagon T* FE 35mm f/1.4 ZA (\$1,600) and FE 28mm f/2 (\$450).



Tokina AT-X 24-70mm f/2.8 PRO FX

TOKINA

The Tokina AT-X 24-70mm f/2.8 PRO FX (\$999) for Canon and Nikon full-frame DSLRs uses three glass molded aspherical elements and three SD Super-Low Dispersion elements to maximize performance. The new Silent Drive-Module provides fast and silent autofocus quiet enough for video applications. A One Touch Focus Clutch mechanism enables seamless switching between autofocus and manual focusing.



Sigma 24-35mm f/2 DG HSM | A

SIGMA

The latest Sigma lenses are in the Art series, their line with the best performance and best image quality. The Sigma 24-35mm f/2 DG HSM | A (\$1,000) is the world's first full-frame zoom with an f/2 aperture. The 24mm f/1.4 DG HSM | A (\$760-\$850, depending on mount) gives photographers a wider option than the standard 35mm lens, and it's perfect for tack-sharp images of anything from portraits to landscapes.

TAMRON

On the heels of their blockbuster 15-30mm full-frame zoom, Tamron announced two new prime lenses for full-frame DSLRs. The SP 35mm f/1.8 Di VC USD (\$600) and SP 45mm f/1.8 Di VC USD (\$600) both feature close focusing (7.9 and 11.4 inches, respectively), an all-new cosmetic appearance and integral VC (Vibration Compensation) image stabilization. Tamron also introduced the affordable zoom 18-200mm f/3.5-6.3 Di II VC (\$250).



Tamron SP 45mm f/1.8 Di VC USD (Model F013)



Zeiss Batis 85mm f/1.8

ZEISS

The new Batis line for Sony mirrorless full-frame E-mount cameras places Zeiss at the innovation forefront once again. Available in 25mm f/2 (\$1,300) and 85mm f/1.8 (\$1,200) configurations, the series provides ideal focal lengths for wide-angle street shooting and for portraiture. Built to the highest standards with the most advanced materials and techniques, both feature something new for camera lenses: the focusing distance and depth of field are read from a bright OLED display on the lens barrel.

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IMAGE BY THERESA THURMAN

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IMAGE BY THERESA THURMAN

DRONES

UNMANNED AERIAL VEHICLES HAVE BECOME MORE POPULAR AND EASIER TO USE, ALLOWING YOU TO CAPTURE SCENES IN FRESH AND EXCITING WAYS

BY THEANO NIKITAS

Aerial photography and cinematography have never been easier, thanks to the development of user-friendly, but sophisticated unmanned aerial vehicles (UAVs). More commonly referred to as drones, these devices range from tiny consumer models to those used by professionals. While some come equipped with integrated cameras, other UAVs—like those featured here—can be mounted with third-party models, from GoPro action cameras to high-end still and video cameras. The market for drones is still growing and finding its way among photographers, but these options should get you started.



3D ROBOTICS SOLO

Designed to fly the GoPro HERO3, 3+ or 4, the 3DR Solo—which is equipped with a dual 1 GHz computer—is optimized for the latter two camera models. With an iOS or Android device, app and a Solo gimbal (not provided), pilots have total in-flight control over the GoPro's features, including recording start/stop and camera settings. The camera can also be controlled via dedicated buttons on the gaming-style controller. Live streaming of HD 720p video is also possible. Assorted shooting modes include Cable Cam, which locks the drone on a straight path between two points so you can concentrate on panning and tilting without concern for the direction of the Solo. An "Orbit" option keeps the subject of your choice perfectly positioned in a circle, or the Solo can automatically track and follow a subject with the "Follow Me" option. Expect flying times of 20 and 25 minutes in a 0.5-mile range, with and without the camera, respectively. A flight simulator to help newcomers hone their flying skills is included. The Solo requires an iOS or Android mobile device for operation and comes bundled with a battery, controller and charger. No gimbal is provided. List Price: From \$1,000.

DJI SPREADING WINGS S1000+

Thanks in part to its sturdy carbon-fiber arms and landing gear, this eight-rotor drone is capable of flying heavy DSLRs such as the Canon EOS 5D Mark III with a maximum flight time of 15 minutes when using a 6S 15000 mAh battery. Compatible with DJI's Z15 Zenmuse camera gimbals, the S1000+'s retractable landing gear and low gimbal mounting bracket provide access to a wide range of shooting angles, and dampers separate the gimbal bracket from the main frame to reduce high-frequency vibrations. A removable upper centerboard provides access to the IMU (inertial measurement unit) and makes it easy to install other components such as the main controller, along with other accessories, such as the iOSD (on screen display) and the DJI Lightbridge HD video downlink. The centerboard is compatible with the DJI WKM and A2 flight controllers. Equipped with a new power distribution system, power cords and cables are secured so they don't come loose during flight. Folding arms are designed for convenient portability, but the S1000+ can be set up and ready to fly in about five minutes. In addition to the basic model, 10 kit variations are also available. List Price: From \$1,900.





FREEFLY SYSTEMS ALTA

The ALTA is designed to carry a 15-pound payload with professional cameras such as the RED DRAGON, ARRI ALEXA and Sony F55, among others, for up to a 14-minute flight time. Unlike other drones, the gimbal, like Freefly's MOVI, can be mounted on top or on the bottom to film from either an upward-facing or a downward angle. Thanks to its Toad in the Hole quick-release mechanism, the gimbal can be quickly disconnected and moved from one position to the other. In addition to the gimbal's in-flight stabilization, the rigid carbon booms minimize vibration and air-frame resonance, and an integrated column diminishes initial take-off vibration. ALTA's Synapse flight controller provides an integrated on-screen display with advanced data read-outs, including a variety of flight information. Flight modes include manual, height hold, climb rate control, position hold, ground speed control, return-to-home and auto-land. Thanks to the Synapse's capabilities and remotely adjustable speeds, pilots have extreme control over the ALTA's velocity, whether executing very slow movements or dynamic moves. Although this is a sophisticated model, the ALTA comes fully assembled and can go from case to ready to fly very quickly. Bundled components include a Pelican case, battery cage, landing gear for top mounting, Toad in the Hole quick release and more. Be sure to budget for batteries, a gimbal and other necessities. List Price: From \$8,495.



WALKERA TALI H500

This bundle includes a brushless, 3-axis gimbal that mounts and provides stabilization for the GoPro HERO3, 3+ and 4. The TALI H500 six-rotor drone comes with a 12-channel transmitter with a 5-inch color display to view data and a real-time view from the camera. It offers a range of flight options, including a beginner-friendly mode, as well as fully manual controls. Equipped with an advanced GPS system, a single button press will bring the drone home and, in the event of a lost signal, the TALI H500 will attempt to return to its starting position before landing. Additionally, it can circle a GPS waypoint. The built-in, rechargeable battery powers flight times of up to 25 minutes, with battery charge status monitoring to avoid running out of juice midflight. The TALI H500 is also available in a bundle with the company's iLook camera. List Price: \$1,400 (with 3-axis gimbal and case).

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FLASH ACCESSORIES AND MODIFIERS

WITH THE RIGHT EQUIPMENT AND A LITTLE KNOW-HOW, ON-CAMERA LIGHTING CAN BE BEAUTIFUL

BY WILLIAM SAWALICH

On-camera lighting is nothing new, but making light from flash systems beautiful—by modifying it and getting it off the camera—kind of is. It's easier than ever to create better, more flattering images with a speed-light flash with these accessories and modifiers.

Ask 100 photographers how they most like to modify their flashes, and 99 will answer "diffusion." Like a thin layer of clouds in the sky, diffusion softens the light, fills in harsh shadows and makes specular flash generally more flattering—especially for portraits. One of the most traditional, popular, versatile and portable light modifiers is the umbrella. Umbrellas can be "shoot through," made of translucent silk and positioned between the flash and the subject to diffuse the direct light, or "bounce," lined with white, silver or gold, and backed with opaque black fabric to minimize spill and reflect all of the light back out of the umbrella, diffusing it greatly in the process.

Whichever type you prefer, you can't use an umbrella when the flash is mounted on the camera. You first need to mount it on a stand, but it must have a baby spud. (The "spud" is the post at the top of a stand, and "baby" is the standard 5/8" size connector in the photo world.) If you prefer things a little more deluxe, check out models with air cushioning, which makes collapsing the stand an easier, more comfortable proposition. The **Manfrotto Alu Master Air-Cushioned 12' Stand** is light and durable, extends to 12 feet tall, and folds down flat for portability, thanks to Manfrotto's Quick Stack System (QSS). It retails for about \$125.

You'll need an adapter bracket with a shoe mount to hold your flash by its hot-shoe base. There are lots of options, and as long as they're well made and easy to grip, they all work fine—but they must include one key design: a pass-through hole and knob to accommodate the umbrella's post. **Impact's Umbrella Bracket** is about \$20 and attaches securely to a baby spud on one end and grips the flash tight at the other. In between is a hole for holding the umbrella and a tension handle for tilting and swiveling the light—all the better to aim the umbrella exactly where you want it.



Impact Umbrella Bracket



Manfrotto Alu Master Air-Cushioned 12' Stand



PocketWizard Plus X Transceiver

Ready to trigger your off-camera flash? You could use a tethered cable, but more convenient is a wireless trigger like the **PocketWizard Plus X transceiver**, which retails for under \$100 and can trigger any flash from up to 500 yards away. It's the simplest transceiver PocketWizard sells; just attach one to the camera's hot-shoe and the other to your flash (via an included cable), set them both to the same channel and fire away.

As for the umbrella, consider a deluxe version of this versatile, portable diffuser. The **Lastolite Joe McNally signature-series 4 In 1 Umbrella** sells for \$200 and can be configured for white or silver bounce, shoot through, or shoot through with a square black mask to shape the direction of the light and contain its spill, as well as produce light that's a little more like a softbox with a square catchlight in the subject's eyes.

Another way to soften flash is to use handheld diffusion or a bounce card between the flash and subject. **Lastolite's TriGrip Difflector** is a combination diffusion panel and reflector with a molded handle that makes it easy to grip with just one hand. The special fabric allows light to bounce off of one side while passing through the other. Available in silver and gold (for



Westcott Pocket Box Max



Lastolite TriGrip Difflector



Erin Manning Pocket Box Softbox Kit from Westcott

added warmth) and sizes from 18" to 48" for \$45 to \$100.

For photographers who want diffusion, but don't always want to remove the flash from the camera, a variety of modifiers fit the bill. In terms of straight softboxes, the **Westcott Pocket Box Max** is a \$20 softbox built exclusively for speedlights. It's about as big a softbox as you can get on the camera, measuring 8x12" in size. Westcott also offers the **Erin Manning Pocket Box Softbox Kit**, which includes different sizes and shapes of collapsible Pocket Boxes for \$50.

The **LumiQuest Softbox III** is another small softbox; at \$50, this 8x9" diffuser accommodates different flashes and folds flat for convenient storage and travel.

The simplest and least expensive subtle diffusion option is the **Sto-Fen Omni-Bounce**, which is a compact, translucent, semi-rigid plastic diffuser that slips over a flash to subtly soften and spread the light. They're made specifically to fit a variety of different flashes, and all of them retail for under \$10.

Gary Fong's Lightsphere line of modifiers upsizes that approach, in hard plastic and collapsible soft plastic versions with accessories that can be used to bounce, diffuse, focus and even colorize flash output. The original hard plastic **Lightsphere Universal** sells for \$50 and is a strong on-camera diffuser that works perfectly for indoor photo shoots in which the light is also bounced directionally off of a wall or ceiling. The \$60 **Collapsible Lightsphere** is even better because it folds down to take up less space in the camera bag.

The Lightsphere can accommodate an amber-colored top to warm the output. Normally near daylight, strobes can be modified with gels to change their color for special effects or to match various types of light. For instance, to balance flash with interior tungsten illumination, a Color Temperature Orange (CTO) gel is used to shift the color temperature of the flash down to the color temperature of the tungsten lights. Otherwise, one of them is going to look incorrect; the flash will appear too blue, or the tungsten will



Rogue 3-in-1 Flash Grid



Rogue FlashBenders

appear too orange. Many manufacturers make pre-cut packs of gels that fit perfectly over the face of a flash. Gel-maker **Rosco** partnered with **David Hobby**—whose well-regarded blog called **Strobist** is all about improving flash—to produce the **Strobist Collection** of gels, which includes 20 1.5x5.5" gels for color matching and special effects for about \$20.

Expolmaging makes **Rogue FlashBenders**, fabric panels with flexible rods inside that allow them to be bent and shaped into a bounce card, a small softbox or even a snoot (a tube that focuses light into a column). FlashBenders start at \$20, but to purchase a collection of everything Rogue offers, consider the **FlashBender 2 Portable Lighting Kit**, which, for \$200, includes six reflectors and panels, 20 gels, 3-in-1 grids (for focusing light into a tight circle), 20 grid gels and a compact and convenient travel bag.

Speaking of grids, these honeycomb-like modifiers attach to the front of a flash in order to rein light into a focused

beam, making a circle of illumination rather than a broad spread. The aforementioned **Rogue 3-in-1 Flash Grid** uses interchangeable honeycomb inserts to achieve a moderate 45° circle of light down to a tight 16° circle. These grids are ideal for limiting spill, which makes them great when directed back toward the camera—like hair lights and edge lights that create depth and separation between subject and background. The **3-in-1 Flash Grid Starter Set** is \$40.



Honl Photo Speed Grid

Snoots create a tighter spot with a harder edge, largely determined by its length and diameter. **Honl Photo's Speed Snoot** is a \$30 fabric snoot—white on the inside, black ballistic nylon out—which can unfold into a diffuser/reflector. It affixes to a variety of flashes from any manufacturer via the optional \$10 **Honl Photo Speed Strap**. The Speed Strap can also be used to hold the **Honl Photo Speed Grid**, a \$30 rectangular grid that fits almost any flash.

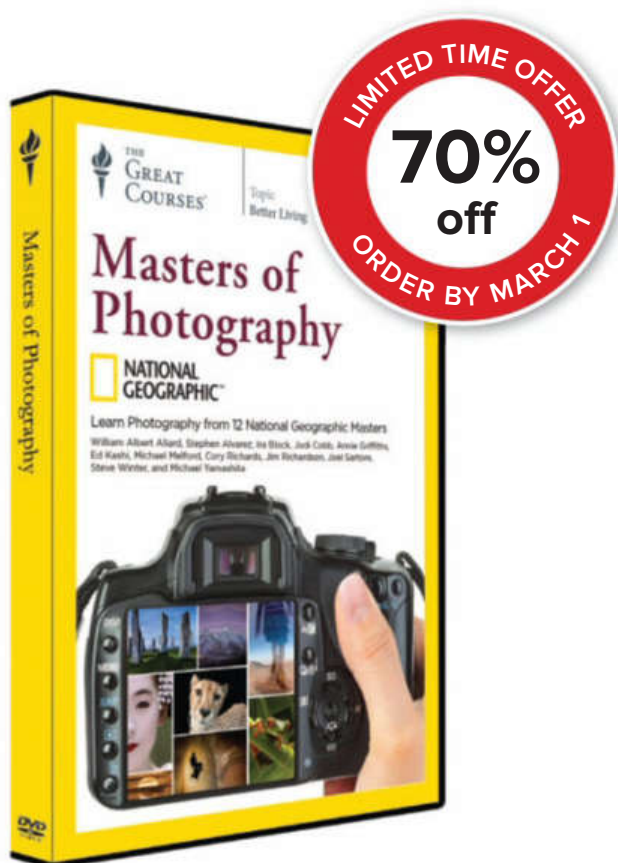
For something a bit unique, try the **Impact Strobros Beauty Dish II**. Beauty dishes are popular "big strobe" modifiers in the fashion and beauty world because they soften the output without eliminating all of the specular nature of the light. With the right subject, it can make a portrait really pop. The Strobros beauty dish is small enough to fit on a flash even when mounted on-camera, and it retails for just \$30.

If you're looking for a two-in-one offering, consider the **LightSwitch speedlight case** from **LumoPro**. What's so special about this \$30 case? This one does double-duty: It can be unzipped into a flexible bounce card; when it's not modifying your light, it's protecting your flash.

LumoPro LightSwitch Speedlight Case



Rogue FlashBender 2 Portable Lighting Kit



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AFFORDABLE MONOLIGHT STROBES

PROS MAY BE OKAY SPENDING A FORTUNE FOR THEIR STROBES, BUT MANY OF US PREFER MORE AFFORDABLE MONOLIGHTS

BY WILLIAM SAWALICH

For many photographers, stepping up from on-camera flash to the world of powerful studio-style strobes can be daunting. But it doesn't need to be, especially once you're introduced to the world of affordable monolight options. These self-contained strobes have all of their controls contained right in the head. Unlike a pack-and-head strobe system, monolights can be plugged individually into an AC outlet. This makes them versatile, for use in studio and on location, because they can be positioned far apart. It also makes them especially practical for beginners because they can be purchased one at a time and they don't tie you to a specific brand.

The biggest factor in selecting a strobe is power. Strobe output is measured in joules, or watt seconds. A good way to interpret watt seconds is to equate them to the amount of light output by a comparable tungsten bulb. For instance, a 100w/s strobe provides illumination equivalent to turning on a 100-watt light bulb for one second. You might imagine that's a lot of light, especially given how fast a strobe burst is, but 100w/s is actually a very low-power strobe output. Some units exceed 1000w/s, 2000w/s or even more. In the most affordable monolights, though, high output is fairly rare.

The **Interfit ACE 100w/s flash kit**, for instance, provides all the basics without the expensive bells and whistles. For under \$100, the kit contains an ACE 100w/s monolight with manual controls, stepless power adjustment across a four-stop range and a built-in optical slave and sync port, as well as a light stand and an umbrella for softening the strobe's output.

Another especially affordable option is the **Flashpoint Budget** studio monolight, which is available in 120w/s, 160w/s and 300w/s versions. These flashes sell for \$50, \$70 and \$100, respectively, making them perhaps the least expensive way to outfit a studio with strobes. Affordable as they are, they're not made of plastic. These strobes have an aluminum housing for durability, and features like replaceable flash tubes make them a practical, low-risk investment.

For photographers who want a bit more power, consider the **Smith-Vector Flashlite FLC200** and **FLC300**. These 200w/s and 300w/s monolights are still quite affordable, weighing in at \$230 and \$260, respectively, and they maintain the easy-to-use roots of their common ancestor, the Smith-Vector parabolic hot lights that generations of photographers have used to learn the basics of lighting.



Interfit ACE 100w/s Flash Kit



Flashpoint Budget
160w/s

Elinchrom makes many high-end strobe options popular with world-class photographers, but that doesn't mean all of its offerings are high-output and feature-laden with price tags to match. In fact, the **D-Lite 100w/s**, **200w/s** and **400w/s** monolights cost \$230, \$350 and \$400, respectively, yet they still provide features professionals love. For instance, the built-in Skyport wireless receiver makes wireless syncing and triggering of multiple strobes a snap since it doesn't require external hardware (aside from the



Elinchrom D-Lite



Dynalite Baja B4



Paul C. Buff
Einstein E640

camera-mounted Skyport transmitter, sold separately). The D-Lites are fan-cooled to prevent overheating, and they offer five-stop variability in tenth-stop increments. They can also accommodate firmware updates via the built-in USB connection, and an optional wireless module can even provide strobe control via iPhone, iPad and iPod touch.

Paul C. Buff's Einstein E640 is, in many ways, a wolf in sheep's clothing because it offers several high-end features in a relatively affordable package. At \$500, the 640w/s monolight sports all-digital controls and an LCD display, as well as precisely adjustable power across a nine-stop range (from just 2.5w/s up to the full 640w/s) variable in tenth-stop increments. The Einstein is particularly known for its short flash durations, which make strobing fast-moving action much easier. It also offers rock-solid color consistency via the selectable Constant Color mode—useful when perfect color accuracy is a must.

If you value portability over all else, consider the **Dynalite Baja B4**, a compact, battery-powered monolight. The Baja B4 is a 400w/s strobe with six stops of range, adjustable in tenth-stop increments. The rechargeable lithium-ion battery is enough for 550 full-power flashes, and the flash duration ranges from 1/500 to a blazing fast 1/12,800—ideal for freezing action. The LED modeling light saves size, weight and power, and C-Mode offers burst shooting up to 15 flashes per second. The Baja B4 retails for \$600.

The **Phottix Indra 500** isn't strictly a monolight, though it behaves a lot like one. This 500w/s strobe can be powered by an AC outlet or from the included 5,000 mAh battery, which holds enough juice for 400 full-power flashes on a single, five-hour charge. The Indra 500 also offers many benefits typically reserved for speedlights—things like TTL metering and second curtain sync—thanks to built-in wireless receivers for Nikon and Canon cameras. All these features come with a price: At \$1,200, the Indra 500 is one of the most expensive strobes in this roundup.

For photographers who need even more power, step up to the **Bowens Gemini 750Pro** and **1000Pro PW** monolights. At \$1,050 and \$1,250, respectively, these lights may not be for beginners on a limited budget, but for photographers who need higher power to overcome bright daylight or to achieve deep depth of field in studio situations, these monolights are powerful and feature-rich. Adjustable across a five-stop and seven-stop range, respectively, the lights are controlled via manual dials with digital readouts. Optional Travepak batteries make them powerful lighting allies even in remote locations, and multi-voltage capability means traveling photographers won't have to worry about compatibility even with



Quantum Qflash TRIO QF8

varying voltages. Built-in PocketWizard receivers make the lights convenient, as well.

The **Quantum Qflash TRIO QF8** is part monolight, part speedlight. It's bigger than the average hot-shoe flash, it's more powerful, and it has a built-in parabolic reflector with diffuser—yet it can still be mounted to a hot-shoe and it's battery-powered. So is it a monolight, or is it a speedlight? It's a Qflash! The \$875 QF8 is available with built-in TTL wireless receivers for Canon or Nikon systems, and can control all the same features including AF assist, high-speed sync and the ability to control remote flashes—and adjust their settings and output—from the command center of the primary unit. The great thing about the QF8 and its 80w/s output is that it can't be overworked; it can fire full-power flashes as fast as possible for as long as the battery will last.

Westcott's Skylux LED looks like a monolight strobe, but it's actually a continuous light, powered by efficient and bright LEDs. It's perfect for photographers who want to shoot video, too, but don't want to have to buy a second set of lights. The daylight-balanced output will mix well with strobes, and with an equivalent output to a 1200-watt tungsten bulb, this is one bright light. It's dimmable down to 30% and sports a built-in parabolic reflector for a 60° spread. This bright, efficient, versatile light sells for \$1,000.

DP



Westcott Skylux LED



Phottix Indra 500



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BAGS AND CASES

FROM SMALL BAGS FOR FROM-THE-HIP SHOOTING TO LARGER PACKS AND CASES FOR LONGER TREKS, SOLUTIONS TO CARRY AND PROTECT YOUR GEAR

BY JON SIENKIEWICZ

One hundred years from now, photographers may be taking pictures with objects we'd scarcely recognize, but they'll likely be making the same decisions about the gadget bag or pack they carry it in. Shoulder bag, sling or backpack? Natural materials or synthetic? And how many bags do you have to own before it's too many?

We're lucky in that the assortment of high-quality carrying solutions is the widest and deepest it has ever been. As new names appear and older standbys redefine themselves, we still evaluate most products based on these seven characteristics: comfort, accessibility, capacity, protection, cosmetics, durability and innovation. All of these attributes are important, but only you can decide which matter most to you. For me, protection and accessibility are tops, followed closely by comfort and capacity.

SHOULDER BAGS

Traditionally, the most popular style, shoulder bags are available in every material and in sizes suitable for everything from full-sized professional DSLRs to the smallest mirrorless cameras, plus lenses, accessories and a healthy lunch. Soft-sided bags offer light weight and the flexibility to conform to your body, and usually are smaller when empty. Rigid bags naturally tend to provide more protection. Some people find them easier to work from because they can provide a tabletop (of sorts) when worn bandoleer-style with the strap diagonal across your torso.

The trend today, for security and style, is toward nondescript bags that aren't obviously camera bags. The operative word there is "stealth." An undercurrent running in precisely the opposite direction is the fashion movement. Companies like **Capturing Couture**, **Jill-e Designs**, **Kelly Moore Bag** and **ONA** offer camera bags that easily pass for ladies' modern handbags or a gentleman's satchel. And not to be forgotten are the omnipresent bags sold by camera manufacturers. Some of them are well above average, but nearly all of them boldly advertise their contents to the world.

Domke bags have been part of the camera landscape for decades. The original **F2 bag** and its descendants have probably accompanied more photographers on more assignments than any other single model of gadget bag. Made in the USA of waterproof canvas, the F2 holds a full-sized DSLR and four or more lenses, plus a flash and other small items. Very similar in design, but built of significantly upgraded materials, the **Next Generation Chronicle** features



Domke Next Generation Chronicle



Tenba Switch 10





LowePro SlingShot 202 AW



Think Tank Photo
TurnStyle 20 Sling Bag



Vanguard Reno 22

HOW TO CHOOSE THE RIGHT BAG

If you're trying to decide between this bag or that one, take the analytical approach. Draw a matrix of the most desirable traits and rank the bags in order—accessibility, capacity, comfort, cosmetics, durability, innovation, protection. A gorgeous bag is just excess baggage if you can't access your equipment easily. And a comfortable bag is a liability if it's thinly padded or has wimpy fasteners. All bags are a compromise, to a certain degree. Buy one that embodies the characteristics you require most.

repositionable dividers and more comfortably holds a 70-200mm $f/2.8$ lens. It accommodates a tablet (up to 9.7 inches) and has two expandable front pockets. It also provides attractive steel hardware, a numbered identity plate and YKK zippers. List Price: \$119 (F2); \$269 (Next Generation Chronicle).

Mirrorless camera fans might enjoy the **Tenba Switch 10**. It accommodates a mirrorless camera and three to five lenses. It features a quick-access top zipper and magnetic closures. It has a rear pocket that holds a 10-inch tablet and a non-slip strap. The defining feature is the swappable cover—choose from black, gray urban camo or three bold fashion colors. List Price: \$109.

For those occasions that call for a smaller, lighter bag, the **Vanguard Reno 22** fits a small DSLR and a pair of additional lenses. It weighs less than a half-pound empty and is available in three colors (including a safety orange that stops traffic). It just might be the perfect little bag, the one you use to carry your camera to work for lunch-hour picture-taking, for example. Cosmetically, the khaki model is a cross between covert and stylish. List Price: \$24.

SLING BAGS

The theme that drives the sling bag design is rapid access to gear. They're built to be comfortably slung diagonally on the neck and shoulder, and can be whipped quickly into position in front of the shooter. The doors are usually hatch-like and nearly all open from the side so that a camera or lens can be immediately retrieved and put into action.

Some say **LowePro** created the sling bag category. True or not, it's certain that they offer some iconic examples of the genre. The classic **SlingShot 202 AW (All Weather)** totes a DSLR and up to five lenses, and has a segregated upper storage area for personal items. It features a clever



Tamrac Anvil

tripod lashing system (Lowepro calls it the Hideaway Tripod Mount) and an organizer pocket in front for writing tools, maps and the like. List Price: \$69.

The **TurnStyle 20 Sling Bag** from **Think Tank Photo** features a more linear design that allows it to be configured to carry longer lenses. It also has a separate sleeve for a tablet (9.7 inches). It features a fully zippered, spacious front pocket that holds many small items. Built from top-quality components, including YKK zippers and durable poly-ballistic fabrics, the TurnStyle 20 can be worn as a belt-mounted bag, too. It's very comfortable to carry, and is a great choice for all-day shooting sessions. List Price: \$99.

PHOTO BACKPACKS

Some photo backpacks allocate nearly all of their capacity to camera gear, while others take a more balanced approach and leave room for a jacket, food, small electronics like a GPS and other things one might find useful on a hike. Both have their place and which model you choose obviously depends on your intentions. If you haul a large number of lenses and a couple of bodies to various locations throughout the day, not being able to pack a sandwich in the same bag probably isn't a deal breaker for you. But if you spend your time outdoors trekking, biking or simply walking in the woods, you need a bag that houses more than just photo gear.

The harness—the network of straps that ties your shoulders to the backpack—is of extreme importance. An ill-fitting pack can ruin more than your day. The harness must be sufficiently adjustable and should hold the pack snugly against your back. When you adjust it—always with the help of a friend—make sure it's packed with the load you normally carry. Fitting an empty backpack is like holding your stomach in when you try on a belt.

The **Tamrac Anvil** line of photo backpacks features wide, comfortable waist belts that are removable and can be used separately. The belts and bags both support MOLLE clips, as well as their civilian counterparts. They also offer a



Tamrac MAS

very well-thought-out tripod mounting system. Available in six sizes to suit your needs, the tough Anvil series is maximized for photo cargo capacity, but provides zipped butterfly pockets on front for personal items. All but the tall and skinny Anvil Super 25 feature padded notebook computer pockets; all come complete with rain covers. List Price: From \$229.



Clik Elite Escape

If you're looking for escape, the **Clik Elite Escape** backpack is built of heavy-duty 1680 denier and 420 denier ballistic nylon fabrics, and provides an outer front pocket for clothes and food, a 3-liter hydration compartment and a system of adjustable, padded internal dividers. It's a comfortable pack and provides more than enough space for accessories and smaller items, in addition to a DSLR kit and four additional lenses. List Price: \$159.

WAIST PACKS AND HOLSTERS

In theory, waist packs and holsters are perfect—by hanging cameras and lenses from a belt around your waist, you move the weight closer to your center of gravity and reduce back strain. They're also flexible because you can add or omit the pockets and pouches as needed.



Think Tank Photo Modular Set

Think Tank Photo offers a comprehensive set of belt accessories and cases. Their **Modular Set** (\$164) includes four cases to fit lenses, flash and general accessories, and attaches to any Think Tank belt or beltback. **Tamrac** has long offered their proprietary **MAS system** (from \$19) of lens cases, pouches, water bottle boots and general packs that fit their Anvil Modular Accessory Belt, as well as many of their other packs, in fact, any pack compatible with MOLLE clips. **Lowepro** has an offering in this arena, too. The **Lowepro Event Photographer kit** (\$305) includes a Technical Vest, Technical Belt and eight S&F (Street & Field) carry components, plus a duffel to hold the entire set. DP

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CAMERA SUPPORTS

A RANGE OF RELIABLE TRIPODS, MONOPODS
AND MORE FOR YOUR SHARPEST PHOTOS YET

BY J. ANA F. BECKETT

Whether you're a beginner, an enthusiast or a pro, camera supports are essential for eliminating camera shake, shooting scenes in available light without a flash and capturing seamless panoramas. Without solid, stable support, long exposures such as fireworks or night sky photos are impossible to shoot without blur. A dependable tripod makes close-up or macro photography easy, as you can use the slowest shutter speed without worrying about camera movement, as well as for fun, everyday projects like family portraits that include you and food photography. A good tripod is one of your most important investments.

3 LEGGED THING

As a compact and multifunctional tripod system, the **3 Legged Thing Evolution Brian 3** is a versatile option for travel. With counter-folding legs that fold back on themselves, it conforms to airline regulations for hand luggage and easily fits into a camera bag or suitcase. The Brian 3 folds down to 15.7 inches, but it's able to extend to 72.8 inches and only weighs 3.3 pounds. It owes its stability to Japanese carbon-fiber construction that allows it to support up to 66 pounds. Five-section legs can be independently locked in 23°, 55° and 80° angles with ParaLock twists; one of its legs can be removed and used as a monopod. For low-angle or macro photography, the center column can be reversed to get your camera down to nearly ground level. Estimated Street Price: \$499.



Flashpoint 3POD
P5CFH Tripod

fiber and an anodized finish, making it lighter, stronger and more portable than traditional materials. Capable of supporting a hefty payload of up to 20 pounds, the P5CFH is a space-saver without sacrificing stability. It uses an advanced "flat-travel" design that does away with the more bulky and common "round" folding style. A removable two-tiered center column gives added height for high-angle shots. Rubber pads at the base of each leg grip are textured for secure anchoring in grass or uneven ground. Estimated Street Price: \$149.

BENRO

Benro's latest addition to the camera support category is its **MoveOver range of sliders for video**. The **MoveOver4** is an entry-level option for shooters who want to add linear motion to their projects. It supports loads of up to 8.8 pounds and has 23.6 inches of carriage travel. Smooth, quiet gliding along a 1.8-inch-wide aluminum rail is possible, thanks to two stainless-steel embedded rods. The slider can be easily adjusted and leveled with removable and articulating rubber feet. There's also a bubble level built into the carriage to tackle leveling on uneven surfaces. Estimated Street Price: \$199.

FLASHPOINT

For photo enthusiasts looking for a multipurpose, compact camera support system that's ideal for landscapes, scenics and travel photography, the **3POD P5CFH Tripod** is manufactured with industrial-strength carbon

GITZO

Gitzo has updated its popular range of **Traveler Tripods**. The **Series 2** four-section is the newest addition and the lightest in the range. It features slim legs that don't sacrifice rigidity due to Gitzo's new Carbon eXact tubes. With a shortest closed length of 14.4 inches and a maximum height of 48.2 inches, it's a useful addition to any travel kit. Its 180° leg folding mechanism pioneered by Gitzo, the first in the world, makes efficient use of folded space by allowing room for the center column and head in between the folded legs. The Series 2 supports up to 22 pounds, but weighs only two pounds. Estimated Street Price: \$679.



3 Legged
Thing
Evolution
Brian 3



Novoflex TrioPod

Joby SLR-ZOOM
GorillaPod



Benro MoveOver4

GURA GEAR

Anansi by Gura Gear can be filled with birdseed, beans, rice or buckwheat hulls, among other items, as a supportive bag that secures cameras in any environment. It cradles lenses and stabilizes tripods, or it can give a light stand or boom more weight as a ballast bag. An hourglass shape is function in design, reducing the amount of fill needed without compromising surface area for stability. There's a Velcro® divider inside that allows you to fill each side according to your preference. Non-slip coating on each edge makes for durable and convenient support. Available in ranger green and red, Anansi is made in the U.S. with heavy-duty Cordura and can be shipped filled or unfilled. List Price: \$35-\$45.

JOBY

Flexible-tripod maker **Joby** has a great option for SLR cameras with zoom lenses weighing up to 6.5 pounds. Its **SLR-ZOOM GorillaPod** also works seamlessly with camcorders, mics and off-camera flashes. A stainless-steel mount screw with a 3/8-inch adapter allows for use with any professional ballhead. It has over two-dozen wrappable leg joints, and can bend and rotate 360° for unmatched flexibility, be it around a tree limb, park bench or any convenient mounting area. The SLR-ZOOM GorillaPod's enhanced stability even in difficult terrain comes from durable German TPE rubber grip rings and high-quality Japanese ABS plastic. List Price: \$49.95.

MANFROTTO

The **Manfrotto 290 Xtra** is part of the new **290 collection**, which includes the **290 Light** for beginners and hobbyists, the **290 Dual** for advanced creativity and the **290 Monopod** for portability. The 290 Xtra was designed to be versatile, as it meets the varied needs of photographers across the spectrum—from portrait and fine art, to landscape and still, and even video shoots. Available in both aluminum and carbon fiber, its solid, rigid body is built for sturdiness. Four new leg-angle positions give the 290 Xtra unique flexibility, and with a removable head for future upgrades, it's a gear investment that will see you through many photo excursions and projects. Estimated Street Price: \$160 (290 Xtra).



Gura Gear Anansi

NOVOFLEX

The **Novoflex TrioPod** continues to adapt to each photographer's unique needs. With a modular support system that can be customized, the configurations address a range of professional or hobbyist camera support setups. It starts with the TrioPod base, which can be paired with aluminum or carbon-fiber legs, mini-tripod legs or a three-legged hiking stick. The base allows for four leg angles of 20°, 40°, 60° and 90°. Estimated Street Price: \$585 to \$930 (varies, depending on configuration).

OBEN

Small, light and easy to pack, tabletop tripods are perfect travel companions. **Oben's TT-300** is an ideal option for positioning your camera on any flat, raised surface for group pictures, or even on the ground or floor for stable low-angle, close-up macro shots. Turn it sideways to brace against a wall for increased stability. A twist lock allows the extension of its center column, with a height ranging from 9.5 to 17.3 inches. To store the TT-300, fold the legs for a retracted length of only 11.5 inches. It comes with a mini-ballhead that pairs with most cameras, and can support up to six pounds. Estimated Street Price: \$62.

REALLY RIGHT STUFF

The **TVC-33** is **Really Right Stuff's** standard-height **Versa Series 3** carbon-fiber tripod. At only 4.3 pounds, it's capable of supporting 50 pounds of gear, making it lightweight to carry while offering rock-solid support of 600mm telephotos, gimbal heads and large-format cameras. The SureGrip Apex Lock combines a solid aluminum apex with a high-strength stainless-steel ring that mechanically locks into place with set screws. The large-diameter, teardrop-shaped rubber ball feet keep contact with the ground at virtually any angle, while keeping the leg sidewalls from touching the ground even at the lowest settings. The TVC-33 reaches a maximum height of 58.6 inches, a minimum height of 4.1 inches and a compact folded length of 25.6 inches. List Price: \$925.



Oben TT-300



Gitzo Series 2 Traveler



Really Right Stuff TVC-33



Manfrotto 290 Xtra

SLIK 924 CF 4-
Section Carbon
Fiber Tripod



SLIK

Professional photographers will appreciate the ultra-heavy construction and reliability of **SLIK's 924 CF 4-Section Carbon Fiber Tripod**. Designed for use with a DSLR and 35mm still camera with long telephoto/zoom lens, or large- and medium-format cameras, it can easily support up to 26.5 pounds. Its maximum height extends to 70.5 inches, and it folds down to a compact 21.8 inches and a manageable weight of 5.1 pounds. Rack-and-pinion-type center column elevation makes it easy to achieve fine adjustment. Four leg sections can be adjusted with twist locks at three angles, independently of each other. Neoprene grips and rubber feet complete the rugged features. Estimated Street Price: \$599.

VANGUARD

On-the-go photographers will find the **VEO AM-264TR** monopod from **Vanguard** indispensable. It has three retractable legs, each fitted with an anti-slip rubber foot, to quickly stabilize shots from one moment to the next. It fits easily in a carry-on with a folded length of 22.25 inches, and can be used for video, photo or even as a walking stick. Reaching its full height of 64.1 inches and able to support up to 13.2 pounds, it complements any camera in the field. Its ball joint is essential for smooth pans and tilts, and weather is no challenge with a soft rubber handle that provides unbeatable grip. List Price: \$99.



Vanguard VEO AM-264TR

BALLHEADS

Just as important as a solid tripod is a quality ballhead. Providing a stable platform for smooth pans and tilts, ballheads give you accurate control and solid support.

ACRATECH

The **Acratech GP** has a unique design that allows it to function as a ballhead and a gimbal head, as well as a leveling base. Considered a "best buy" for its practicality and versatility, this mid-sized ballhead eliminates the need to carry a separate leveling base; used upside-down, you can create accurate stitched panoramas by panning parallel to the horizon even when using your tripod on rocky or uneven terrain. Full movements allow any camera position. The GP weighs only one pound and has a 2 $\frac{3}{8}$ -inch base diameter, and is fully designed and manufactured in California. List Price: \$399.



ARCA-SWISS

Building on the popularity of their B-series ballheads, the **Z-series Monoball Z1 sp** (single-pan) ballhead by **Arca-Swiss** includes the "Arca"-style quick-release system to quickly mount and dismount cameras. A unique feature that differentiates Arca-Swiss ballheads from all others is their shape, an ellipse rather than a sphere, which means unparalleled tension modulation for exacting photographers. The Monoball Z1 sports optimized materials and coatings, and can withstand an incredible 130 pounds off-axis. A tension adjustment thumb-dial is built into the indexed friction control knob. Estimated Street Price: \$379.



GITZO

Extremely balanced and versatile, the **GH1382TQD** from **Gitzo** pairs well with Series 0 and 1 Traveler tripods. It uses an independent pan lock, as opposed to a friction control knob. Weighing 0.86 pounds, with a load capacity of 24.25 pounds, it's the slimmest in the range. Its Ws2 coating means it doesn't compromise in ball smoothness, and it has excellent durability in both external and internal components. It comes with the Arca-Swiss-compatible plate and fits most Arca-Swiss-style plates from other brands. List Price: \$319.



NOVOFLEX

The **Novoflex ClassicBall 5**, available as an upside-down version, has a panorama panning base with 360° laser-engraved scaling at the bottom of the housing. For the panorama function, the upside-down ballhead allows 100% accurate leveling to avoid a sloped horizon in your panoramas. An integrated bubble level is useful, as well as three vertical 90° openings for the ball neck. The ClassicBall is made to last, with an all-metal design that incorporates advanced polymer materials and an attractive matte titanium finish. It supports up to 26 pounds. Estimated Street Price: \$599.



REALLY RIGHT STUFF

A recent slight redesign has made **Really Right Stuff's BH-40** better than ever. Its weight has been reduced from 13 ounces to 11.9 ounces. Previously limited to a clearance of 2.7-inch platforms, the main lock knob has been raised and slightly shortened, so it's now able to clear any platform. The new load capacity is 18 pounds, with a 45% stronger lockup. The BH-40 is a perfect general-purpose ballhead, and with a smaller profile because of the lack of protruding handles, it's much easier to carry and pack. List Price: \$375.



PHOTO ACCESSORIES

RECOMMENDED EXTRAS FOR GETTING THE SHOT

BY KRISTAN ASHWORTH

You've organized your gear—packed cameras, lenses and tripod—and planned your photo adventure. Here are a few items to consider that might make returning with the images you want a much easier proposition, and help you display them once you're home.

The **miggo Grip&Wrap DSLR and Grip&Wrap CSC (Mirrorless)** are camera straps made from Neoprene and Lycra that morph into protective cases. Wear the Grip&Wrap around your wrist to prevent your camera from dropping, then wrap it around your camera when done shooting to protect it from scratches and impact. The straps accommodate the majority of small to medium DSLR cameras and mirrorless cameras equipped with short to medium (kit) lenses. List Price: \$39 (each).



miggo Grip&Wrap
CSC (Mirrorless)



SpiderPro Hand Strap

The **SpiderPro Hand Strap** is adjustable to any size wrist and compatible with extended battery packs/vertical grips. Its "S" design allows clear access to the battery door and memory card slots. With high-quality memory foam on the inner side of the strap, you'll have greater comfort over longer periods of time. The hand strap comes with an optional leather wrist strap that snaps on for extra support and security. List Price: \$65-\$75.

The **Loop 3** by **Luma Labs** has an all-new, solid CNC-machined aluminum loop, trademark Lumalon and leather shoulder pad, and quick-adjust carbon sliders. It allows your camera to rest securely at your hip, and the large knob is there for easy attachment and removal of your camera. Strap length can be adjusted easily, and strap slides can be flipped not to move. This sling strap is perfect for big and



Luma Labs Loop 3

small cameras alike. List Price: \$99.



HoldFast Camera Leash | Leather Wrist Strap

small cameras alike. List Price: \$99.

The **HoldFast Camera Leash | Leather Wrist Strap** is a great multi-tool for on-the-go photographers. It can be used to tether your camera to your wrist, as an add-on to the Money Maker Harness by linking two Camera Leashes to it to comfortably carry a third camera, to steady your gear as you traverse rough terrain, to secure your keys to a belt-loop or to strap a water bottle

to your backpack. List Price: From \$45.

Cotton Carrier's Endeavor Belt makes it convenient to carry your DSLR or mirrorless camera comfortably and hands-free. It holds the camera securely while providing easy access. Made of durable 1680 denier polypropylene and fitted with a Lexan camera receptacle, the device includes a shoulder strap with sliding safety tether and a small pocket for a wallet, cell phone or extra lens. Estimated Street Price: \$89.



Cotton Carrier Endeavor Belt

OP/TECH's Rainsleeve protective plastic covers for cameras are an easy-to-carry, easy-to-use way to protect gear from rain, sand and snow. The newest size, the Rainsleeve-Small, can fit a camera with a lens up to 4.5 inches in diameter and eight inches long, yet fits easily in a pocket or camera bag. A unique viewfinder eyepiece opening adapts to most camera viewfinders, allowing you to compose through the lens, not the plastic. Estimated Street Price: \$8.95 (two per package).



OP/TECH Rainsleeve



camalapse 4

Trigger your camera's shutter from your iOS or Android device with **Triggertrap Mobile**. Find the Mobile Dongle Kit that fits your camera, download the free app to your iPhone, Android phone, iPad or iPod touch, and take control of your camera in creative ways. Multiple modes include standard trigger, motion trigger, sound trigger, time-lapse, distance-lapse, face detection trigger, customizable HDR and more. List Price: From \$46.

The **camalapse 4** can help create panning time-lapse videos or steady panoramic images with most digital cameras (up to five pounds), action-sports cameras and smartphones. Simply attach your compact camera or camera phone (with **camalapse 4 Mobile**, which includes a smartphone clamp tripod mount), and then point your lens where you want it to end up, twist and start your camera. It rotates 90° in 15 minutes, for a full 360° in an hour, with no batteries required. List Price: \$30 (camalapse 4); \$40 (camalapse 4 Mobile).

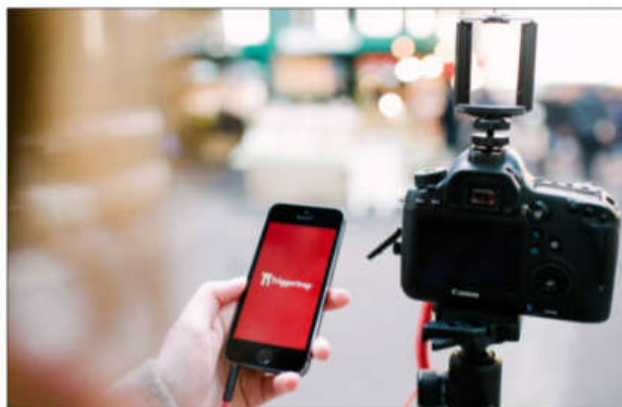
Take your iPhone photography to the next level with the **olloclip Active Lens for iPhone 6 and iPhone 6 Plus**. The pocket-sized Active Lens combines an Ultra-Wide and a 2x Telephoto lens, and lets you switch between lenses in seconds. It works on front- and rear-facing cameras, and easily clips on and off the iPhone. The Active Lens can be paired with the **olloCase**, a slim, protective case for the iPhone 6 and iPhone 6 Plus. List Price: \$99 (Active Lens); \$29 (olloCase).



olloclip
Active Lens

Lexar's series of **Professional 2000x SDHC/SDXC UHS-II cards** offers up to a 300 MB/s read transfer speed and up to a 260 MB/s write speed. Professional 2000x cards come with a USB 3.0 SD UHS-II card reader to continue an expeditious workflow through postprocessing. Lexar also has a more affordable line of **Professional 1000x SDHC/SDXC UHS-II cards**. With a wide capacity range of 16 GB to 256 GB, the cards have a transfer speed of up to 150 MB/s and a write speed of up to 95 MB/s. List Price: \$82-\$136 (2000x); \$23-\$205 (1000x).

When the need arises to carry multiple memory cards, a card wallet will make it easier to keep track of which cards are full and which are ready to go. **Think Tank Photo's Pixel**



Triggertrap Mobile



Goal Zero Venture 30 Solar Recharging Kit



LensPen Action
Camera Lens
Cleaner

Think Tank Photo Pixel Pocket Rocket



Pocket Rocket is available in several sizes and versions to carry CF, XQD or SD cards. List Price: \$16-\$22.

Hoya's **EVO ANTISTATIC** series of professional filters, **Protector**, **UV** and **Circular Polarizer**, are available in common sizes ranging from 37mm to 82mm. They require less frequent cleaning than traditional filters thanks to the hardened, antistatic top layer that's water repellent, and stain and scratch resistant. The Improved 18-layer Super Multi-coating formula reduces or eliminates reflections on the surface of the glass and yields a 99.8% light transmission rate, so there's virtually no effect on the final image's clarity, contrast or color balance. The lightweight, one-piece, low-profile aluminum frame eliminates vignetting when used on ultra-wide-angle lenses. Estimated Street Price: Starting at \$81 (Circular Polarizer); \$48 (UV).



Hoya EVO ANTISTATIC Filters

Don't get caught with a dead camera battery in the field. The **Venture 30 Solar Recharging Kit** by **Goal Zero** features a built-in charging tip and is ideal for cameras, phones, tablets and more. This rugged, durable, weatherproof recharger allows you to charge up from a USB in about five hours or via the included Nomad 7 solar panel in about nine hours. List Price: \$169.

In addition to its camera lens cleaner, **LensPen** now offers an **Action Camera Lens Cleaner** that's smaller than the original, and is designed to remove dust and fingerprints from GoPro, Sony and other action camera optics. Simply remove the camera from the housing and use the retractable natural brush to remove any loose dust or dirt from the lens. Then, twist the cap off the other end and use the cleaning tip to remove any dirt, grease or fingerprints from the lens. List Price: \$9.95.

To ensure the colors in your print are the same as what you viewed on your monitor while processing your image, it's important to calibrate your monitor. **Datacolor's** re-designed portable **Spyder5 calibration system** features a seven-detector optical engine for increased tonal response, accurate shadow detail and smooth gradients. The **Spyder5EXPRESS** uses an interactive four-step guide to walk you through calibration, with a before-and-after feature. The **Spyder5PRO** includes an advanced ambient light sensor to compensate for room light, additional calibration settings and display analysis. The **Spyder5ELITE** includes a tripod mount for projector display calibration, unlimited calibration settings, monitor matching and optimized gray balance routines. List Price: \$129 (Spyder5EXPRESS); \$189 (Spyder5PRO); \$279 (Spyder5ELITE).



Datacolor Spyder5 Calibration System



Frame Destination Gallery Pouch



Vista-Labs PixelPerfectFrames

PixelPerfectFrames by **Vista-Labs** do one thing: display digital photos, without remote controls or complicated menus. The real wood picture frames come in different styles, colors and finishes to complement your style. Each frame is about 12x10 inches, depending on frame style, and has a high-resolution, 9.7-inch display. The frames detect motion in the room and go to sleep if no one is there. Supported image formats include JPEG and PNG, and you can load your favorite images via an SD memory card (not included). List Price: \$399 and up.

Frame Destination's Gallery Pouch offers custom protection for your fine art and photography. Instead of wrapping delicately framed pieces in multiple layers of bubble wrap, the Gallery Pouch is a custom-fit pouch that matches the exact measurements of your photograph or painting. List Price: Varies.

DP

THE BIG PRINT

FOR THE FINE ART OF PRINTMAKING, A SELECTION OF PROFESSIONAL PHOTO PRINTERS BY THEANO NIKITAS

Despite the tendency to view images digitally, there's nothing quite like the look and feel of a print. The quality and longevity of prints has reached a point where we can output stunning images on an almost limitless assortment of substrates. Traditional darkroom prints are emulated with Baryta papers while fine-art, glossy, metallic and other media are designed to more varied aesthetics than ever before. Whether you're printing for clients or a fine-art exhibition, or simply to create a beautiful image that will be displayed on your wall, you'll find a printer that meets your needs (and budget). Here are a few options that cover a range of possibilities.



CANON PIXMA PRO-1

A staple in Canon's inkjet printer line, the PIXMA PRO-1 is a pigment printer that utilizes a Lucia 12-ink system for creating color and monochrome prints. Output sizes range from snapshot-sized 4x6 inches up to 13x10-inch prints. Cross-platform-compatible, this 60-pound printer is capable of printing on CDs/DVDs, as well as a wide range of substrates. Connectivity includes high-speed USB 2.0, Ethernet and PictBridge, which allows you to print directly from a camera via a USB cable. Capable of print resolution up to 4800x2400 dpi, the PRO-1 can achieve print speeds of up to 2 minutes, 10 seconds for an 8x10-inch color bordered photo. The printer comes with an assortment of software and has a footprint of 27.4x18.2x9.5 inches, so you'll need to set aside some desk space for this solidly built machine. Estimated Street Price: \$1,000.



DNP DS620A DYE-SUB PHOTO PRINTER

Capable of outputting up to 400 prints per hour, this dye-sub printer is perfect for the event photographer who needs to produce large quantities of prints on demand. It's also great for photo booths at parties, weddings and other large-crowd events. Just set up a fun backdrop, shoot, print and present guests with their images. A 4x6-inch print takes less than 9 seconds, 14 seconds for a 5x7 and less than 17 seconds for a 6x8-inch print. For fun (and profit), the DNP DS620A can even output 2x6-inch strips like the vintage photo booths that populated stores and shopping centers in the 1950s and 1960s. The printer is Windows-only, measures a set-it-up-anywhere 10.8x14.4x6.7 inches and weighs 26.4 pounds. Price: \$1,050.



Epson SureColor P600



Epson SureColor P800



Epson
SureColor
P400

EPSON SURECOLOR P400/P600/P800

Epson rebranded its Stylus Photo line of inkjet printers this year, bringing all of its models under the SureColor global branding umbrella, including the 13-inch P400, 13-inch P600 and 17-inch P800 desktop models. All three offer similar features, including WiFi and Ethernet connectivity, and versatile paper handling including borderless cut-sheet prints as small as 3.5x5 inches—up to 13x19 inches for the P400/P600 and 17x22 inches for the P800. The printers are cross-platform-compatible, and now both Mac and Windows can print panoramas up to 10 feet long! While the P400 and P600 come with a roll feed, it's an optional accessory for the P800. While the P600 and P800 utilize Epson's new UltraChrome HD inks, the P400 is compatible with the UltraChrome HG2 pigment inkset that includes red and orange inks for richer colors. This is also designed to save ink since the printer doesn't have to mix red and yellow inks to produce orange. All three printers offer auto-switching between photo and matte black inks when using different paper types. Estimated Street Price: TBD (P400); \$800 (P600); \$1,295 (P800).



ALEX SMITH

(real HoldFast shooter)

"The highest functionality, the best quality, and unparalleled badass-ness."

SITE: alexsmithphoto.com

INSTAGRAM: [@alexsmithphoto](https://www.instagram.com/alexsmithphoto)

#HOLDFASTSELFIE

This was one of the winning images submitted via the HoldFast Selfie contest by real photographers being real about what they use and why.



EXTERNAL STORAGE

PROTECT YOUR PHOTO AND VIDEO LIBRARIES FROM THE UNEXPECTED BY THEANO NIKITAS

External storage is a critical component of any digital darkroom for a number of reasons. Regularly backing up your images to an external drive helps protect your files from disappearing during a computer failure. In fact, it's a good idea to have at least two backups, preferably three: one at home/in the studio, one off-site and one in the cloud. Given the rise of digital camera resolution and the growth of HD and UHD video, you're probably using at least one external drive to store the gigabytes of image files you've accumulated. We pulled together a selection of external storage devices that span functionality, size and price, and hope you'll find one external drive (or more) that meets your needs.

BUFFALO DRIVESTATION ULTRA

This DAS (Direct Attached Storage) system provides the storage space and transfer speed needed for 4K video (up to 1243 MB/s), as well as files from high-res cameras. Utilizing 10 drives, the DriveStation Ultra can be configured for RAID 0/5/6 and supports cross-platform connectivity. The system requires more desktop real estate than most external storage devices, and it weighs nearly 40 pounds, making it best suited for the home or pro studio.

CAPACITIES AVAILABLE: 40 TB, 80 TB

INTERFACE: Thunderbolt 2, USB 3.0, eSATA

DIMENSIONS (HxWxD): 7.48 x 12.60 x 15.24 inches

LIST PRICE: \$4,800 (40 TB); \$10,000 (80 TB)



G-TECHNOLOGY G-RAID

Now available with up to 16 TB total capacity, the G-RAID storage system consists of two removable hard drive disks in a durable, all-aluminum enclosure. A built-in controller supports RAID 0/1 configurations; the latter is recommended for best backup security, but JBOD is also possible. Powered by the bundled AC adapter, the system features a smart cooling fan for quiet operation. Ready for Mac out of the box, the drive can be reformatted for Windows, with two Thunderbolt 2 ports and a single USB 3.0 connection, and there are also USB 3.0 versions of the G-RAID. Performance ranges from up to



400 MB/s to 440 MB/s. The drives come with the appropriate cables; additional or replacement hard drives can be purchased separately.

CAPACITIES AVAILABLE: 8 TB, 12 TB, 16 TB

INTERFACE: Thunderbolt 2, USB 3.0

DIMENSIONS (HxWxD): 9.92 x 5.12 x 3.58 inches

LIST PRICE: \$800-\$1,300 (dual interface); \$600-\$1,200 (USB 3.0 only interface)



LACIE RUGGED THUNDERBOLT

Shock, dust and moisture resistant, the bus-powered Rugged Thunderbolt drive is equally at home in the field and on your desk. Cross-platform-compatible, the drive is equipped with individual USB 3.0 and Thunderbolt ports, and bundled with USB and Thunderbolt cables. These highly responsive drives offer transfer rates of up to 122 MB/s for the traditional drives and 387 MB/s for solid-state drives, via either USB 3.0 or Thunderbolt. The unit easily fits into any gear bag or backpack for transport. Additional protection is provided by the included automatic backup and password-protection software.

CAPACITIES AVAILABLE: 1 TB, 2 TB (hard disk); 250 GB, 500 GB, 1 TB (SSD)

INTERFACE: Thunderbolt, USB 3.0

DIMENSIONS (HxWxD): 3.5 x 5.5 x 1.0 inches

LIST PRICE: From \$190 (1 TB HDD) to \$950 (1 TB SSD)



STORAGE WITH A TASTE FOR ADVENTURE



G-DRIVE[®] ev ATC
with Thunderbolt™

G-DRIVE[®] ev RaW



PRESSURE RESISTANT



DUST RESISTANT



SHOCK RESISTANT
2.0m DROP



WATER PROTECTION



FLOATS IN WATER



PERFORMANCE



SERIES COMPATIBLE

#myruggedlife

Risk-taking creatives like [G-Team Ambassador](#) and Adventure Photographer [Lucas Gilman](#) depend on compact external storage when shooting on the road or in the wild. [The G-Technology rugged family](#) keeps your once-in-a-lifetime work safe without sacrificing speed, convenience, or style.

g-technology.com/rugged

2 meter drop on a carpeted concrete floor (with G-DRIVE ev RaW inside). Approximately 35% lighter than the G-DRIVE ev. Floats in water and should be dropped into a pool of water up to 1ft for 30 secs, your drive is protected. Compatible with the G-DRIVE ev, G-DRIVE ev SSD and G-DRIVE ev RaW.

One GB is equal to one billion bytes and one TB equals 1,000 GB (one trillion bytes) when referring to hard drive capacity. Accessible capacity will vary from the stated capacity due to formatting and partitioning of the hard drive, the computer's operating system, and other factors.

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SEAGATE BACKUP PLUS DESKTOP

Seagate now includes a free two-year subscription to 200 GB of Microsoft OneDrive cloud storage with any of its Backup Plus family of hard drives, including the Desktop model. Like all the drives in this line, the Desktop version is preloaded with Seagate's Dashboard software for automatic or manual system backup. The software also can be scheduled to back up Facebook and Flickr images. Download the free iOS or Android app for seamless mobile device backup wirelessly or via a cloud service. The free Lyve app helps consolidate and organize images into a single collection on the drive for viewing on any device. This cross-platform USB 3.0 drive comes with an AC adapter for continuous power. Special Mac/Time Machine-ready versions are also available.

CAPACITIES AVAILABLE: 2 TB, 3 TB, 4 TB, 5 TB, 6 TB, 8 TB

INTERFACE: USB 3.0

DIMENSIONS (HxWxD): 7.06 x 4.65 x 1.63 inches

LIST PRICE: \$100-\$300



WESTERN DIGITAL MY PASSPORT ULTRA

The maximum capacity of the My Passport Ultra drives has been increased, now capable of storing up to 3 TB of data. The slender bus-powered unit can reach transfer speeds of up to 5 GB/s through its USB 3.0 port. Less than an inch thick, the drive is compact for convenient portability. Although cross-platform-compatible, Mac users need to reformat the drive, but the included software provides encryption, as well as automatic local and cloud (Dropbox or Baidu) backup. Four options (black, white, red, blue) dress up the desktop with a splash of color.

CAPACITIES AVAILABLE: 500 GB, 1 TB, 2 TB, 3 TB

INTERFACE: USB 3.0

DIMENSIONS (HxWxD): 3.21 x 4.33 x 0.62 inches (500 GB, 1 TB);
3.21 x 4.33 x 0.83 inches (2 TB, 3 TB)

LIST PRICE: \$80-\$200

FORM MEETS FUNCTION

Looking for a portable storage device that marries advanced features with industrial design? The **Seagate Seven** is a sleek and thin 7mm (0.28-inch) portable hard drive. A beautiful, brushed stainless-steel enclosure is designed to look good and protect its 5mm (0.20-inch), 500 GB hard drive. Equipped with a USB 3.0 port and bundled with a USB 3.0 cable, the bus-powered drive works with Mac and Windows operating systems, and comes preloaded with Seagate's Dashboard backup software. The drive is also compatible with Seagate's free iOS and Android mobile device backup apps. List Price: \$100.



FROM COMPLETE SUITES TO SPECIALIZED APPS, WORKING IN THE DIGITAL DARKROOM IS MORE PRODUCTIVE THAN EVER

BY KRISTAN ASHWORTH

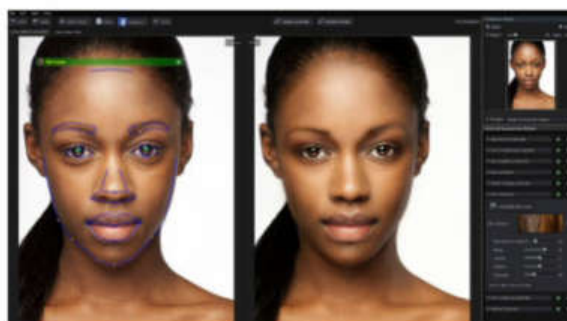
While some photographers prefer to do most of their processing in a single application, others opt for choosing a specific app to do a specific job. No matter which method suits your workflow best, here's an overview of software tools to help you get organized and be more creative.

ADOBE

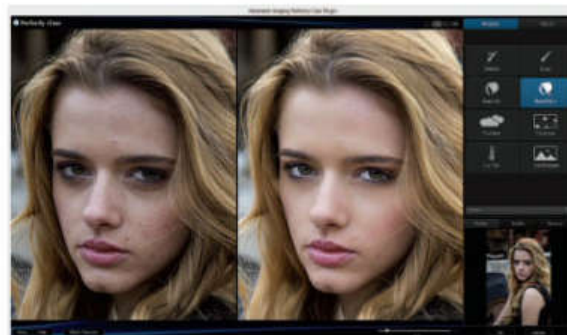
Lightroom CC, available in Adobe's Creative Cloud subscription or as a standalone version, has continued to be updated since the 6.0 version was released in April 2015. A feature that has had professionals raving is its faster performance by taking advantage of compatible graphics processors to boost its overall speed, especially when you're enhancing images in the Develop module. It also offers new ways to create HDR images and panoramas, and now you can easily decrease or increase the amount of haze or fog in a photograph. Other additions include Facial Recognition and a new Tone Curve adjustment tool. List Price: \$9.99/month subscription to the Adobe Creative Cloud Photography plan, which includes Lightroom CC and Photoshop CC; \$149 for Lightroom 6 as a standalone program.

ALIEN SKIN SOFTWARE

Instill your images with the subtle nuances and analog beauty of film photography with **Exposure 7**. With over 470 presets that emulate creative focus effects and the warmth of film, Exposure offers a wide range of starting points for developing your look, such as Kodachrome, TRI-X, Polaroid, Portra, Neopan, Panatomic-X and GAF 500. Then, save your new look as a preset with a name, category and notes. Later, you can apply your custom look to a photo (or batches of photos). Exposure 7 now features the creative focus effects of Bokeh, plus a slew of new film presets and textures. Purchase Exposure 7 and receive a free upgrade to Exposure 8 when it's released in winter 2015. List Price: \$149.



PortraitPro



Athentech Perfectly Clear Plug-Ins 2.0

ANTHROPICS

For fast and easy portrait retouching, **PortraitPro** offers a suite of tools with intelligent auto correction. It gives users the ability to adjust the lighting on the subject's face, enhance skin and hair, fix blemishes and reduce/remove wrinkles, slim and sculpt the face, detect gender and age and, in the newest v15 update, offers full makeup control, wide-angle lens distortion correction and more. List Price: From \$80.

ATHENTECH

Perfectly Clear Plug-Ins 2.0 for Photoshop and Lightroom offers more comprehensive editing than ever while utilizing reengineered algorithms to cut postprocessing time in half. Upgraded features include a new noise engine to remove noise more effectively, full-resolution zoom, opacity sliders for image blending, split view for visualizing edits and Import/Export presets. Due to its popularity on the mobile app, Plug-Ins also includes the Beautify feature, which provides 10 automatic corrections at once—Perfectly Smooth, Blemish Removal, Dark Circle Removal, Shine Removal, Face Slimming, Catchlight, Eye Enhance, Eye Enlarge, Teeth Whitening and Skin Tone. List Price: \$149 (individual package); \$199 (bundle); \$75 (individual user upgrade); \$99 (bundle upgrade).

BOINX SOFTWARE

FotoMagico 4 helps you mix photos and videos to create multimedia slideshows. It automatically adjusts for frame rates, aspect ratios and resolution, letting you focus on creating a story through transitions, audio and layers. FotoMagico also provides a teleprompter setting to aid in formal presentations. The 4.5 version update supports 4K video with export

settings and is optimized for Mountain Lion, Mavericks and Yosemite operating systems. List Price: \$99; free update for existing users.

COREL

A full-featured photo organizer/editor, **PaintShop Pro X8** lets you do the basics such as crop, straighten, retouch and remove red eye, plus you can create web, print and photo projects with brushes, textures, drawing and painting tools, and more. The latest version offers creative text wrapping and content-aware Magic Move, in addition to enhanced Batch Mode processing and brushes, selections and layers. List Price: \$79/\$59 (PaintShop Pro X8); \$99/\$79 (PaintShop Pro X8 Ultimate).



DxO

Having newly optimized its algorithm, **DxO OpticsPro's** PRIME technology provides even better rendering of gradients and more natural-looking images. Regardless of shooting conditions, **OpticsPro 10** can bring out the best in your RAW and JPEG photos by correcting optical defects of your equipment, removing digital noise even at high sensitivities, recovering fine details and textures in dark or burnt areas with DxO Smart Lighting, and bringing out color subtleties in your images. The new ClearView feature automatically eliminates haze from landscape photos and smog from urban photos. The latest v10.4 interface offers a new Reset button that lets users cancel all of the manual corrections made to an image in just one click and return to the default preset corrections. List Price: \$129 (Essential Edition); \$199 (Elite Edition).

GOOGLE NIK COLLECTION

The **Google Nik Collection** contains all of Nik's powerful plug-ins bundled together for Photoshop or Lightroom. The collection includes Analog Efex Pro, Color Efex Pro, Silver Efex Pro, HDR Efex Pro, Viveza, Sharpener Pro and Dfine. Nik's U Point® technology makes it easy to selectively edit just the parts of your photos that need touching up without complex masks and selections by dropping control points on an image. List Price: \$149.

IMAGENOMIC

The **Professional Plugin Suite**, available for Photoshop, comes with **Noiseware**, **Portraiture** and **Realgrain**, which can be used together to achieve better portrait output.



Boinx FotoMagico 4

Noiseware performs photo noise reduction as a plug-in or standalone software. Portraiture offers automatic skin smoothing, healing and enhancing effects. Realgrain allows you to apply toning, film and grain effects to your images. List Price: From \$299 (Suite); \$99 (Realgrain); \$79 plug-in/from \$29 standalone (Noiseware); \$199 (Portraiture).

MACPHUN

Noiseless is an app that provides a one-click solution for eliminating the pixelated/grainy patterns generated by nearly every camera when shooting in dimly lit situations. With advanced algorithms, Noiseless automatically detects and corrects for this "noise" in an image, and is able to detect if the image is from a smartphone, action cam or DSLR in order to apply the most optimal correction. The Adjust Panel provides even more detail preservation and selective reduction tools. Noiseless comes configured in a standard version available on the Mac App Store and a Pro version sold on Macphun's website. The Pro version adds a powerful, proprietary RAW noise-reduction technology, support for additional color space models, extra detail controls and the ability to run as a plug-in within Adobe Photoshop and Lightroom, and Apple Aperture. List Price: \$17 (Standard version); \$49 (Pro version).

ONONE SOFTWARE

Perfect Photo Suite 9.5 provides the necessary tools for editing your photos, improving portraits, adding popular looks in color or black-and-white, and resizing for large-format



DxO OpticsPro 10

8TH ANNUAL
NATURE'S COLORS
— PHOTO CONTEST —



First Place Winner Brian Roberts



Second Place Winner Adam Taylor



Third Place Winner Perri Schelat

Send In Your Best Shots That Show Off The Colors
Of The Natural World For Your Chance To Win!

Entry deadline is November 12, 2015.

Visit outdoorphotographer.com/contests for complete contest details.

PRESENTED BY



PHOTOSHELTER

printing. This full-featured photo editor works either as a plug-in editor to Adobe Photoshop and Lightroom, or as a standalone application. Perfect Photo Suite 9.5 is up to two times faster than previous versions, and its Perfect Browse preview mode lets you quickly sort, select and edit photos so you can delete the bad ones, rate the good ones and add keywords. Then, filter only the photos you want and easily send them to Photoshop, Lightroom or Aperture. It also features a new Line Mask tool for making complex selections and Luminosity Masking. List Price: \$149; \$99 (upgrade for current users).

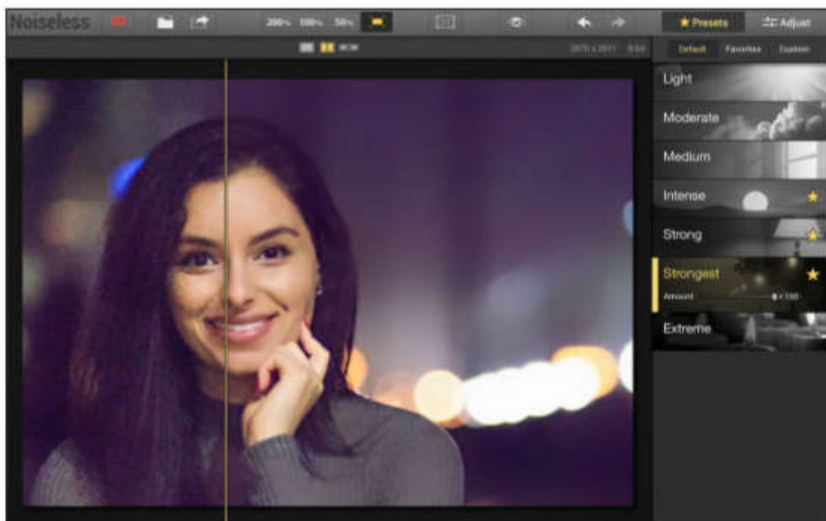
PINNACLE IMAGING SYSTEMS

HDR Express 3 brings professional tools to an easy-to-use application. While maintaining the software's clean design, the upgrade provides photographers with increased speed and additional features. HDR Express 3's merge processing takes half the time to create a merged image when compared to HDR Express 2. The 32-bit color-editing tools are now more responsive. The Adaptive Tone Mapping algorithms have been improved with the addition of a gamma slider for control of midtones. The software also includes new alignment and de-ghosting algorithms that were released with the HDR Expose 3 professional software. RAW file support is included for over 600 cameras. List Price: \$79 (new license); \$49 (upgrade).

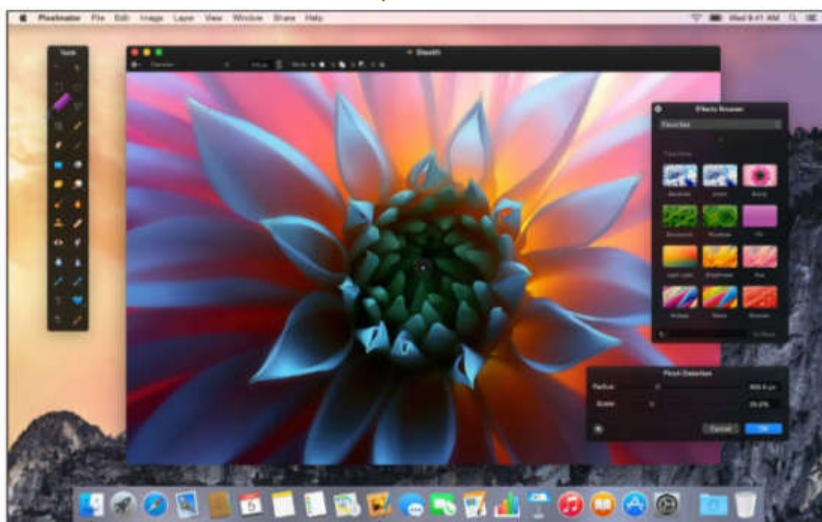


PIXELMATOR

Pixelmator for Mac 3.3 is a full-featured image-editing app that lets you touch up and enhance images, draw or paint, apply effects or create advanced compositions at a price vastly below anything else this powerful. Images can be accessed anywhere with iCloud, sent to iPhoto, emailed, printed, shared or saved to popular image formats—all right from the app. It now includes support for the new Photos app and the new Force Touch trackpad on the MacBook and MacBook Pro. It has also redefined the performance of the Repair tool, allowing you to wipe away unwanted elements from your photos up to five times faster. List Price: \$29.



Macphun Noiseless



Pixelmator for Mac 3.3

TIFFEN

Available as a standalone app for Mac and Windows, or as a plug-in for Adobe Photoshop, Elements or Lightroom, the **Dfx v4** digital filter suite simulates 2,000-plus popular Tiffen glass filters, specialized lenses, optical lab processes, film grain and exacting color correction, as well as natural light and photographic effects. The new version offers enhanced multi-processor acceleration for faster interaction and rendering of images, new filters for optical effects, interface improvements and more. List Price: \$129/\$49 (upgrade).

TOTALLY RAD

This collection of film emulations was created from analyzing 22 rare film stocks sourced from around the world. The new **Replichrome III: Archive** contains a Tweak Kit to customize grain, tone and sharpening, and includes multiple versions of each film, scanned using both Noritsu and Frontier scanners, to give photographers unlimited control over their photos. List Price: \$99.

RESOURCES

3D Robotics
3DRobotics.com

3 Legged Thing
3leggedthing.com

Acratech
acratech.net

Adobe
adobe.com

Alien Skin Software
alienskin.com

Arca-Swiss
rodklukas.com/arca-swiss

Athentech
athentech.com

Benro
benrousa.com

Boinx Software
boinx.com

Bowens
bowensusa.com

Buffalo
buffalotech.com

camalapse
camalapse.com

Canon
usa.canon.com

Capturing Couture
capturingcouture.com

Clik Elite
clikelite.com

Corel
corel.com

Cotton Carrier
cottoncarrier.com

Datacolor
datacolor.com

DJI
dji.com

DNP
dnpphoto.com

Domke (Tiffen)
tiffen.com

DxO
dxo.com

Dynalite
dynalite.com

Elinchrom
elinchrom.com

Epson
epson.com

Expomaging
expomaging.com

Flashpoint (Adorama)
adorama.com

Frame Destination
framedestination.com

Freefly Systems
freeflysystems.com

Fujifilm
fujifilmusa.com

Garmin
garmin.com

Gary Fong
garyfongestore.com

Gitzo
gitzo.us

Goal Zero
goalzero.com

Google Nik Collection
google.com/nikcollection

GoPro
gopro.com

G-Technology
g-technology.com

Gura Gear
guragear.com

HoldFast Gear
holdfastgear.com

Honl Photo
honlphoto.com

HOYA (Kenko Tokina USA)
kenkotokinausa.com

Imagenomic
imagenomic.com

Impact
impactstudiolighting.com

Interfit Photographic
interfitphotographic.com

iON Camera
usa.ioncamera.com

Jill-E Designs
jill-e.com

Joby
joby.com

Kelly Moore Bag
kellymoorebag.com

LaCie
lacie.com

Lastolite
lastolite.us

Leica
us.leica-camera.com

Lensbaby
lensbaby.com

LensPen
lenspen.com

Lexar
lexar.com

LowePro
lowepro.com

Luma Labs
luma-labs.com

LumiQuest
lumiquest.com

LumoPro
lumopro.com

Macphun
macphun.com

Manfrotto
manfrotto.us

miggo
mymiggo.com

Nikon
nikonusa.com

Novoflex
novoflex.com

Oben
obensupports.com

olloclip
olloclip.com

Olympus
getolympus.com

ONA
onabags.com

onOne Software
onl.com

OP/TECH USA
optechusa.com

Panasonic
shop.panasonic.com

Paul C. Buff
paulcbuff.com

Peak Design
peakdesign.com

Pentax (Ricoh Imaging)
us.ricoh-imaging.com

Phottix
phottix.com

Pinnacle Imaging Systems
pinnacleimaging.com

Pixelmator
pixelmator.com

PocketWizard
pocketwizard.com

PortraitPro (Anthropics)
portraitprofessional.com

Quantum Lighting Group
quantumltg.com

Really Right Stuff
reallyrightstuff.com

Ricoh
us.ricoh-imaging.com

Rogue Photographic Design
rogueflash.com

Rokinon
rokinon.com

Rosco
rosco.com

Samsung
samsung.com

Samyang
syopt.com

Seagate
seagate.com

Sigma
sigmaphoto.com

SLIK (Kenko Tokina USA)
kenkotokinausa.com

Smith-Victor
smithvictor.com

Sony
store.sony.com

Spider Pro
spiderholster.com

Sto-Fen
stofen.com

Tamrac
tamrac.com

Tamron
tamron-usa.com

Tenba
tenba.com

Think Tank Photo
thinktankphoto.com

Tiffen
tiffen.com

Tokina (Kenko Tokina USA)
kenkotokinausa.com

Totally Rad
gettotallyrad.com

Triggertrap
triggertrap.com

Vanguard
vanguardworld.us

Vista-Labs
vista-labs.com

Walkera
walkera.com

Westcott Lighting
fjwestcott.com

Western Digital
wdc.com

Zeiss
zeiss.com/camera-lenses



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\$2,195 ⁰⁰ | C Nikon AF-S NIKKOR 300mm f/4E PF ED VR
#NI3004E
\$1,996 ⁹⁵ | D Oben CT-2491 CF Tripod and BC-166 Ball Head
#OBCT2491K2
\$664 ⁹⁵ |
| E Sony Alpha A7S Mirrorless Camera
#SOA7SB
\$2,498 ⁰⁰ | F Zeiss 135mm f/2 APO Sonnar T* ZF.2 Lens
#ZEL352ASZFN
\$2,122 ⁰⁰ | G Litepanels Astra 1x1 Bi-Color LED Panel
#LIA1X1BC
\$1,350 ⁰⁰ | H Canon EOS 5DS DSLR Camera
#CAESDS
\$3,699 ⁰⁰ |
| I Panasonic Lumix DMG-GH4 Camera with Interface Unit
#PADMCGH4BK
\$2,297 ⁹⁹ | J 3DR Solo Quadcopter Drone (No Gimbal)
#3DRSOLO
\$999 ⁹⁵ | K Nikon D750 DSLR Camera with 24-120mm Lens
#NID75024120
\$3,596 ⁹⁵ | L DJI Inspire 1 Quadcopter 4K Video and 3-Axis Gimbal
#DJIINSPIRE1
\$2,899 ⁰⁰ |

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DARREN PEARSON

Beachside Brontosaurus

Point Dume, Malibu, CA

"It's rare to see stars in Los Angeles, but if you travel far enough north to the coastal areas of Malibu and beyond, they are there!" shares Darren Pearson. "I've been to this beach many times during the day, but hadn't realized that this was the location where they filmed the original *Planet of the Apes* scene with the postapocalyptic-looking Statue of Liberty. It's an interesting place in person, and a great beach, but difficult to shoot with all that moisture in the air. Bring a lens wipe if you plan on visiting this spot—you'll use it."

"I used an LED pen called Night-Writer, along with a blue color tip, to illustrate the dinosaur pictured. Starting with the skull, I sidestepped during the long exposure while drawing light shapes in the air with the Night-Writer, ending with the tail, à la Fred Flintstone."

Two-shot composite: Light art at f/8, ISO 100, 150 seconds; stars at f/2.8, ISO 3200, 15 seconds

See more of Darren Pearson's work at dariustwin.com, and follow him on Instagram @dariustwin

VLX

grab your lights
and LET'S GO



VAGABOND™ LITHIUM EXTREME

Heavy Duty Portable Power for Studio Flash Units

Factory-Direct
\$399.95



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PAUL C.
BUFF

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